TEST REPORT
IEC 60598-2-22
Luminaires
Part 2: Particular requirements
Section 22: Luminaires for emergency lighting

Report Number.....:	LCS220105120BS
Date of issue.....:	May 19, 2022
Total number of pages.....:	118 pages
Name of Testing Laboratory preparing the Report.....:	**Shenzhen Southern LCS Compliance Testing Laboratory Ltd.**
Applicant's name.....:	Deshun Smart Technology Co., Ltd.
Address.....:	No. 39, Dongqi Highway, Zhangjiagang City, Jiangsu, China
Test specification:	
Standard.....:	IEC 60598-2-22:2014+A1:2017 used in conjunction with IEC 60598-1:2020
Test procedure.....:	CE-LVD
Non-standard test method.....:	N/A
TRF template used.....:	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No.....:	IEC60598_2_22H
Test Report Form(s) Originator.....:	Intertek Semko AB
Master TRF.....:	Dated 2021-08-20

General disclaimer:

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Test item description.....:	LED emergency light
Trade Mark.....:	--
Manufacturer.....:	As the same applicant
Address.....:	As the same applicant address
Model/Type reference.....:	See model list on page 5
Ratings.....:	See model list on page 5

☒	**Testing Laboratory:**	
Testing location/ address.....:	Shenzhen Southern LCS Compliance Testing Laboratory Ltd. 101-201, No.39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China	
Tested by.....:	Yeoh Zhang (Engineer)	
Check by.....:	Torres He (Director)	
Approved by.....:	Jesse Liu (Manager)	

List of Attachments (including a total number of pages in each attachment):

Attachment No. 1: European group differences and national differences according to EN 60598-2-22:2014+A1:2020 used in conjunction with EN IEC 60598-1:2021

Attachment No. 2: Report IEC 62031.

Attachment No. 3: Report IEC TR 62778.

Attachment No. 4: Report IEC 61347-2-7.

Attachment No. 5: Report IEC 61347-2-13.

Attachment No. 6: Photo documentation.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
IEC 60598-2-22:2014+A1:2017 IEC 60598-1:2020 IEC TR 62778:2014 IEC 62031:2018 IEC 62493:2015 IEC 61347-2-7:2011+A1:2017 IEC 61347-2-13: 2014+A1: 2016 IEC 61347-1:2015+A1:2017	Shenzhen Southern LCS Compliance Testing Laboratory Ltd. 101-201, No.39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China

Summary of compliance with National Differences:

List of countries addressed

☒ The product fulfils the requirements of Germany and European Group differences

EN 60598-2-22:2014+A1:2020; EN IEC 60598-1:2021; EN 62493:2015; EN IEC 62031:2020;

EN 61347-2-7:2012+A1:2019; EN 61347-2-13:2014+A1:2017; EN 61347-1:2015+A1:2021

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Label of luminaires:

For automatic test function model:

LED emergency light
Model No.: DS-EL-01S
220-240V~, 50/60Hz, Emergency power:1.5W,

ta.40℃, C0:D50 C90:D16

Replaceable battery: IFR 18650-1.6Ah 6.4V 1600mAh
Deshun Smart Technology Co., Ltd.
No. 39, Dongqi Highway, Zhangjiagang
City, Jiangsu, China
Importer No.:xxxxxxxxxx

For manual test function:

LED emergency light
Model No.: DS-EL-01M
220-240V~, 50/60Hz, Emergency power:1.5W,

ta.40℃, C0:D50 C90:D16

Replaceable battery: IFR 18650-1.6Ah 6.4V 1600mAh
Deshun Smart Technology Co., Ltd.
No. 39, Dongqi Highway, Zhangjiagang
City, Jiangsu, China
Importer No.:xxxxxxxxxx

Label of battery:

Li-ion Battery: IFR 18650-1.6Ah
6.4V 1600mAh
Temperature Classification: 0℃~55℃
Charge regime: Constant current
Manufacture Date: YY-MM-DD
Battery rated to operate for 3 hours, replace battery if tested duration is less than 3 hours.

Remarks:

1. Do not stare at the operating light source:for models DS-EL-04S and DS-EL-04M

2.Height of WEEE symbol should not less than 7mm, height of other marks at least 5mm, height of letters and numerals at least 2mm.

Test item particulars:	
Classification of installation and use.....:	Luminaires for emergency lighting
Supply Connection.....:	Terminal block
Protection Class.....:	Class II
Degree of Protection.....:	IP20
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item.....:	2022-04-06
Date (s) of performance of tests.....:	2022-04-06 ~ 2022-05-16

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Clause numbers with "*" were not within the scope of CNAS recognition.

Clause numbers between brackets refer to clauses in IEC/EN IEC 60598-1.

The general information of applicant and manufacturer (such as the name and address), product name, model/type reference, trademark and other similar information contained in this report are all provided by the applicant, the laboratory is not responsible for verifying its authenticity.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market.

Modified Information

Version	Report No.	Revision Date	Summary
V1.0	LCS220105120BS	/	Original Version

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ **Yes** ☒ **Not applicable**
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies).....:	Same as manufacturer

General product information:

1. All models are equipped with the same integral SELV emergency control gear and battery,except the appearance and the LED number, for the detail see table below and the photo Doc.

2. The suffix with “M” represents manual test function, with ”S” represent automatic test function. The manual test function is maintained, the automatic test function is the non-maintained.

3. Unless otherwise specified, the model DS-EL-01M was chosen as representative model to perform all test.Model DS-EL-04M tested in difference tests.

Model List:

Model No.	Rating	Battery	Mounting surface
DS-EL-01M	220-240V~, 50/60Hz, ta.40℃, Emergency power:1.5W, IP20	IFR 18650-1.6Ah 6.4V 1600mAh	Surface mounting
DS-EL-02M	220-240V~, 50/60Hz, ta.40℃, Emergency power:1.5W, IP20	IFR 18650-1.6Ah 6.4V 1600mAh	Recessed
DS-EL-03M	220-240V~, 50/60Hz, ta.40℃, Emergency power:1.5W, IP20	IFR 18650-1.6Ah 6.4V 1600mAh	Surface mounting
DS-EL-04M	220-240V~, 50/60Hz, ta.40℃, Emergency power:1.5W, IP20	IFR 18650-1.6Ah 6.4V 1600mAh	Surface mounting
DS-EL-01S	220-240V~, 50/60Hz, ta.40℃, Emergency power:1.5W, IP20	IFR 18650-1.6Ah 6.4V 1600mAh	Surface mounting
DS-EL-02S	220-240V~, 50/60Hz, ta.40℃, Emergency power:1.5W, IP20	IFR 18650-1.6Ah 6.4V 1600mAh	Recessed
DS-EL-03S	220-240V~, 50/60Hz, ta.40℃, Emergency power:1.5W, IP20	IFR 18650-1.6Ah 6.4V 1600mAh	Surface mounting
DS-EL-04S	220-240V~, 50/60Hz, ta.40℃, Emergency power:1.5W, IP20	IFR 18650-1.6Ah 6.4V 1600mAh	Surface mounting

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
22.4 (0)	**GENERAL TEST REQUIREMENTS**		P
22.4 (0.3)	More sections applicable.....:	Yes☐ No☒ Section/s:	—
22.4 (0.5)	Components	(see Annex 1)	—
22.4 (0.7)	**Information for luminaire design in light sources standards**		—
22.4 (0.7.2)	Light source safety standard .....:	IEC 62031 IEC TR 62778	—
	Luminaire design in the light source safety standard		—
22.4 (-)	Part provide normal lighting, test according relevant part of IEC 60598-2 .....:		N/A
22.4 (-)	Adjacent part fulfils relevant part of this part 2		P
22.4 (-)	Self-contained portable emergency luminaires, requirements according Annex E	(see Annex E)	N/A

22.5 (2)	**CLASSIFICATION OF LUMINAIRES**		P
22.5 (2.2)	Type of protection .....:	Class II	P
22.5 (2.3)	Degree of protection.....:	IP20	—
22.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....:	Yes☒ No☐	—
22.5 (2.5)	Luminaire for normal use .....:	Yes☒ No☐	—
	Luminaire for rough service .....:	Yes☐ No☒	—
22.5 (-)	Classified as luminaire suitable for direct mounting on normally flammable surfaces		P
22.5 (-)	Classification code according Annex B	(see Annex B)	P

22.6 (3)	**MARKING**		P
22.6 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
22.6 (3.3)	Additional information		P
	Language of instructions	English	P
22.6 (3.3.1)	Combination luminaires		N/A
22.6 (3.3.2)	Nominal frequency in Hz	50/60Hz	P
22.6 (3.3.3)	Operating temperature		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
22.6 (3.3.5)	Wiring diagram	See user manual	P
22.6 (3.3.6)	Special conditions		N/A
22.6 (3.3.7)	Metal halide lamp luminaire – warning		N/A
22.6 (3.3.8)	Limitation for semi-luminaires		N/A
22.6 (3.3.9)	Power factor and supply current		P
22.6 (3.3.10)	Suitability for use indoors		N/A
22.6 (3.3.11)	Luminaires with remote control		N/A
22.6 (3.3.12)	Clip-mounted luminaire – warning		N/A
22.6 (3.3.13)	Specifications of protective shields		N/A
22.6 (3.3.14)	Symbol for nature of supply	~	P
22.6 (3.3.15)	Rated current of socket outlet		N/A
22.6 (3.3.16)	Rough service luminaire		N/A
22.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N/A
22.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
22.6 (3.3.19)	Protective conductor current in instruction if applicable		N/A
22.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
22.6 (3.3.21)	Non replaceable and non-user replaceable light sources information provided	non-user replaceable	P
22.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
22.6 (3.3.23)	Luminaires without control gear provided with necessary information for selection of appropriate component		N/A
22.6 (3.3.24)	If not supplied with terminal block, information on the packaging		N/A
22.6 (3.3.25)	Luminaires employing light sources emitting UV on mains wiring, information provided		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.6 (3.3.26)	Wall mounted luminaire using external flexible cable or cord longer than 0.3 m, information provided		N/A
22.6 (3.4)	Test with water	15s	P
	Test with hexane	15s	P
	Legible after test	Label is legible	P
	Label attached	Label no curling	P
22.6.1 (-)	Supply voltage	220-240V~	P
22.6.2 (-)	Classification according to annex B		P
22.6.3 (-)	Correct replacement lamp	Non-user replaceable LEDs	N/A
22.6.4 (-)	Range of ambient temperatures	ta: 40ºC	P
22.6.5 (-)	Fuse ratings and/or indicator lamps		N/A
22.6.6 (-)	Facilities to simulate normal supply failure		P
22.6.7 (-)	Marked with correct battery replacement		P
	Non-replaceable batteries		P
22.6.8 (-)	Battery marked with date of manufacture		P
	Space provided on battery label		P
22.6.9 (-)	Correct lamp replacement for combined emergency luminaires		N/A
	Green dot with min 5 mm diameter		N/A
	Instruction leaflet 22.6.10 – 22.6.12 and 22.6.14 – 22.6.16		N/A
22.6.10 (-)	Replacement of battery or luminaire	See user manual	P
22.6.11 (-)	Details of test facilities	manual test function	P
22.6.12 (-)	Details of connection leads		N/A
22.6.14 (-)	Details of device which changes the mode of operation		P
22.6.15 (-)	Photometric data available according 22.17		P
22.6.16 (-)	Any normal preparation procedure		P
22.6.17 (-)	Marking in 22.6.1, 22.6.2, 22.6.7 and 22.6.20 visible on installed luminaire		P
	Marking in 22.6.5, 22.6.7 and 22.6.9 visible during maintenance		P
22.6.18 (-)	Provided with warning if intended for external plug and socket connections		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.6.19 (-)	Instruction leaflet specifies if lamp and/or battery is/are non-replaceable	Replaceable	P
22.6.20 (-)	Marking if luminaire mounted on lighting track systems		N/A
	Photometric data in instruction leaflet		N/A
22.7 (4)	**CONSTRUCTION**		P
22.7 (4.2)	Components replaceable without difficulty		P
22.7 (4.3)	Wireways smooth and free from sharp edges		P
22.7 (4.4)	**Lamp holders**		N/A
22.7 (4.4.1)	Integral lamp holder		N/A
22.7 (4.4.2)	Wiring connection		N/A
22.7 (4.4.3)	Lamp holder for end-to-end mounting		N/A
22.7 (4.4.4)	Positioning		N/A
	- pressure test (N) .....:		—
	After test the lamp holder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lamp holder the lamp holder has not moved from its position and show no permanent deformation		N/A
	- bending test (N) .....:		—
	After test the lamp holder has not moved from its position and show no permanent deformation		N/A
22.7 (4.4.5)	Peak pulse voltage		N/A
22.7 (4.4.6)	Centre contact		N/A
22.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
22.7 (4.4.8)	Lamp connectors		N/A
22.7 (4.4.9)	Caps and bases correctly used		N/A
22.7 (4.4.10)	Light source for lamp holder or connection according IEC 60061 not connected another way		N/A
22.7 (4.5)	**Starter holders**		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
22.7 (4.6)	**Terminal blocks**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Tails		N/A
	Unsecured blocks		N/A
22.7 (4.7)	**Terminals and supply connections**		P
22.7 (4.7.1)	Contact to metal parts		N/A
22.7 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		N/A
22.7 (4.7.3)	Terminals for supply conductors		P
22.7 (4.7.3.1)	Welded method and material		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.6.2		N/A
	- electrical test according to 15.6.3		N/A
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N/A
22.7 (4.7.4)	Terminals other than supply connection		N/A
22.7 (4.7.5)	Heat-resistant wiring/sleeves		N/A
22.7 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
22.7 (4.8)	**Switches**		P
	- adequate rating		P
	- adequate fixing		P
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches	Confirmed for10,000 operating cycles(for test switch)	P
22.7 (4.9)	**Insulating lining and sleeves**		N/A
22.7 (4.9.1)	Retainment		N/A
	Method of fixing.....:		N/A
22.7 (4.9.2)	Insulated linings and sleeves:		N/A
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Ageing test. Temperature (°C).....:		N/A
22.7 (4.10)	**Double or reinforced insulation**		N/A
22.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N/A
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
22.7 (4.10.2)	Assembly gaps:		N/A
	- not coincidental	No gaps	N/A
	- no straight access with test probe		N/A
22.7 (4.10.3)	Retainment of insulation:		N/A
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lamp holder		N/A
22.7 (4.10.4)	Protective impedance device		N/A
	Basic and supplementary insulation bridged by resistor(s) or appropriate capacitor		N/A
	Double or reinforced insulation bridged by at least two separate resistors in series or appropriate capacitor(s)		N/A
	Capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.2 of IEC 60065		N/A
22.7 (4.11)	**Electrical connections and current-carrying parts**		P
22.7 (4.11.1)	Contact pressure		N/A
22.7 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread- cutting screws		N/A
22.7 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- rivets		N/A
22.7 (4.11.4)	Material of current-carrying parts		P
22.7 (4.11.5)	No contact to wood or mounting surface		P
22.7 (4.11.6)	Electro-mechanical contact systems		N/A
22.7 (4.12)	**Screws and connections (mechanical) and glands**		P
22.7 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....:	Fixed enclosure: 1.2Nm	P
	Torque test: torque (Nm); part.....:	Fixed driver: 0.6Nm	P
	Torque test: torque (Nm); part.....:		N/A
22.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
22.7 (4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm)..... :		N/A
	- lamp holder; torque (Nm).....:		N/A
	- push-button switches; torque 0,8 Nm..... :		N/A
22.7 (4.12.5)	Screwed glands; force (Nm)..... :		N/A
22.7 (4.13)	**Mechanical strength**		P
22.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)..... :		N/A
	- other parts; energy (Nm).....:	For all parts: 0.35Nm	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
22.7 (4.13.2)	Metal parts have adequate mechanical strength		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.7 (4.13.3)	Straight test finger		P
22.7 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
22.7 (4.13.6)	Tumbling barrel		N/A
22.7 (4.14)	**Suspensions, fixings and means of adjusting**		P
22.7 (4.14.1)	Mechanical load:		P
	A) four times the weight		P
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm)..... :		N/A
	D) load track- mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) ..... :		N/A
	Metal rod. diameter (mm) .....:		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
22.7 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) ..... :		—
	Stress in conductors (N/mm²) .....:		N/A
	Mass (kg) of semi-luminaire .....:		N/A
	Bending moment (Nm) of semi-luminaire .....:		N/A
22.7 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles..... :		N/A
	- strands broken..... :		N/A
	- electric strength test afterwards		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
22.7 (4.14.5)	Guide pulleys		N/A
22.7 (4.14.6)	Strain on socket-outlets		N/A
22.7 (4.15)	**Flammable materials**		N/A
	- glow-wire test 650°C..... :	See Test Table 22.16 (13.3.2)	N/A
	- spacing ≥30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		N/A
	- thermal protection		N/A
	- electronic circuits exempted		N/A
22.7 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
22.7 (4.16)	**Luminaires for mounting on normally flammable surfaces**		N/A
	No lamp control gear.....:	(compliance with Section 12)	N/A
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A
22.7 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
22.7 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A
	- external		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- fixed position		N/A
	- temperature marked lamp control gear		N/A
22.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
22.7 (4.17)	**Drain holes**		N/A
	Clearance at least 5 mm		N/A
22.7 (4.18)	**Resistance to corrosion**		N/A
22.7 (4.18.1)	- rust- resistance		N/A
22.7 (4.18.2)	- season cracking in copper		N/A
22.7 (4.18.3)	- corrosion of aluminium		N/A
22.7 (4.19)	Ignitors compatible with ballast		N/A
22.7 (4.20)	Rough service vibration		N/A
22.7 (4.21)	**Protective shield**		N/A
22.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
22.7 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
22.7 (4.21.3)	No direct path		N/A
22.7 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment.....:	See Test Table 22.16 (13.3.2)	N/A
22.7 (4.22)	Attachments to lamps not cause overheating or damage		N/A
22.7 (4.23)	Semi-luminaires comply Class II		N/A
22.7 (4.24)	**Photobiological hazards**		P
22.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
22.7 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778 .....:	RG0/RG2	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Luminaires with E_{thr} :		N/A
	a) Fixed luminaires		N/A
	- distance x m, borderline between RG1 and RG2... :		N/A
	- marking and instruction according 3.2.23		N/A
	b) Portable and handheld luminaires		N/A
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
22.7 (4.25)	**Mechanical hazard**		P
	No sharp point or edges		P
22.7 (4.26)	**Short-circuit protection**		N/A
22.7 (4.26.1)	Adequate means of uninsulated accessible SELV / PELV parts		N/A
22.7 (4.26.2)	Short-circuit test with test chain according 4.26.3:		N/A
	Supply source ES1 PSE		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
22.7 (4.27)	**Terminal blocks with integrated screwless protective earthing contacts**		N/A
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
22.7 (4.28)	**Fixing of thermal sensing control**		N/A
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C) .....:		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
22.7 (4.29)	**Luminaires with non-replaceable light source**		N/A
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
22.7 (4.30)	**Luminaires with non-user replaceable light source**		P
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	At least one fixing means requiring use of tool		P
22.7 (4.31)	**Insulation between circuits**		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
22.7 (4.31.1)	SELV or PELV circuits		P
	Used SELV/PELV source		P
	Voltage ≤ ELV		P
	Insulating of SELV/PELV circuits from LV supply		P
	Insulating of SELV/PELV circuits from other non SELV/PELV circuits		N/A
	Insulating of SELV/PELV circuits from FELV		N/A
	Insulating of SELV/PELV circuits from other SELV/PELV circuits		N/A
	SELV/PELV circuits insulated from accessible parts according Table X.1		P
	Plugs not able to make any electrical contact with socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Plugs and socket-outlets does not have protective conductor contact		N/A
22.7 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to make any electrical contact with socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
22.7 (4.31.3)	Other circuits		N/A
	Other circuits insulated from accessible parts according Table X.1		N/A
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- conductive parts are connected together		N/A
	- test according 7.2.3		N/A
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
22.7 (4.32)	**Overvoltage protective devices**		N/A
	Comply with IEC 61643-11		N/A
	External to controlgear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A
22.7 (4.33)	**Luminaire powered via information technology communication cabling**		**N/A**
	Requirements for Class III luminaire		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Rated voltage within the range of ES1 and does not exceed maximum voltage of used connector		N/A
	Luminaire does not create any hazard from overvoltage	(see Annex 2)	N/A
22.7 (4.34)	**Electromagnetic fields (EMF)**		P
	No harmful electromagnetic fields		P
22.7 (4.35)	**Protection against moving fan blades**		N/A
	Test with a standard test finger		N/A
	Test with test probe acc. to Figure 13 (IEC 61032) for portable luminaire		N/A
	Blades rounded with radius ≥ 0.5 mm and:		N/A
	-hardness less than D60 Shore		N/A
	-peripheral speed less than 15 m/s		N/A
	-input power of fan ≤ 2 W at rated voltage		N/A
22.7 (4.36)	**Track-mounted luminaires**		N/A
	Test in accordance with Annex A of IEC60570:2003/AMD2:2019		N/A
22.7 (-)	Luminaire with automatic testing system complies with IEC 62034 as identified in Annex K of IEC 61347-2-7	For automatic test function.	P
22.7.1 (-)	No glow starters in circuit in start of or during the emergency mode		N/A
22.7.2 (-)	Lamp control gears comply with relevant part 2 of IEC 61347 and additional safety requirements for electronic controlgear for emergency lighting in appropriate annex of standards		P
22.7.3 (-)	Protective device disconnect luminaire in case of failure		P
22.7.4 (-)	Impact test min. 0,35 Nm		P
22.7.5 (-)	Circuit separation (self-contained lum.)		P
22.7.6 (-)	Circuit separation (centrally supplied lum.)		N/A
22.7.7 (-)	Charging device		P
	Indicator lamp and colour		P
22.7.8 (-)	Battery meet requirements in Annex A	(see Annex A)	P
	Battery designed to provide duration for at least four years		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Battery only for emergency function		P
22.7.10 (-)	No switch in self-contained emergency luminaire between battery and emergency lighting lamps		P
	No switch in self-contained and central supplied emergency luminaire isolating emergency circuits from mains supply		P
22.7.11 (-)	Failure of lamp(s) not impair operation of the battery		P
22.7.12 (-)	Batteries in self-contained emergency luminaire comply with cl. 23 of IEC 61347-2-7 if applicable		P
22.7.13 (-)	No influence in emergency mode in self-contained emergency luminaire by short-circuit, contact to earth or interruption in normal supply wiring		P
22.7.14 (-)	Self-contained emergency luminaire with remote inhibiting and/or rest mode meet requirements of clause 25 of IEC 61347-2-7		N/A
22.7.19 (-)	Lamp voltage in self-contained emergency luminaire with tungsten filament lamps not exceed 1,05 rated voltage		N/A
22.7.20 (-)	Battery in self-contained emergency luminaire according manufacturers specification and Annex A		P
22.7.21 (-)	Batteries and chargers within self-contained emergency luminaire or in remote box		P
22.7.22 (-)	Remote box in self-contained emergency luminaire comply with same requirements as for the luminaire		N/A
22.7.23 (-)	Locking system for emergency luminaire on track system used for display lighting requires aid of tool		N/A

22.8 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		P
22.8 (11.2.1)	Impulse withstand category (Normal category II)	Category II ☒ Category III ☐	—
	Category III according Annex U		N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
22.8 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 22.8 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N/A
	- Controlgear marked with $\hat{U}_{OUT}$ and f_{UOUT} according IEC 61347-1, clause 7.1, item w	See Test Table 22.8 (11.2) II	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 22.8 (11.2) II	N/A
22.8 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 22.8 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_P	See Test Table 22.8 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 22.8 (11.2) II	N/A
22.9 (7)	**PROVISION FOR EARTHING**		N/A
22.9 (7.2.1 + 7.2.3)	Accessible metal parts		N/A
	Metal parts in contact with supporting surface		N/A
	Resistance < 0,5 Ω.....:		N/A
	Self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a grove		N/A
	Protective earth makes contact first		N/A
	Terminal blocks with integrated screwless protective earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		N/A
22.9 (7.2.2 + 7.2.3)	Protective earth continuity in joints, etc.		N/A
22.9 (7.2.4)	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A
22.9 (7.2.5)	Protective earth terminal integral part of connector socket		N/A
22.9 (7.2.6)	Protective earth terminal adjacent to mains terminals		N/A
22.9 (7.2.7)	Electrolytic corrosion of the protective earth terminal		N/A
22.9 (7.2.8)	Material of protective earth terminal		N/A
	Contact surface bare metal		N/A
22.9 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.9 (7.2.11)	Protective earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A
22.9 (7.2.12)	PELV circuit connected to protective earth for functional purpose		N/A
22.10 (14)	**SCREW TERMINALS**		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 3)	N/A
22.10 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		P
	Separately approved; component list.....:	(see Annex 1)	P
	Part of the luminaire.....:	(see Annex 4)	N/A
22.11 (5)	**EXTERNAL AND INTERNAL WIRING**		P
22.11 (5.2)	**Supply connection and external wiring**		P
22.11 (5.2.1)	Means of connection.....:	Terminal block	P
	Outdoor luminaire has not PVC insulated external wiring if not Class III or SELV/PELV circuits ≤ 25 V AC/60 V DC/25 V peak interrupted DC voltage with frequency 10Hz -200 Hz or protected from outdoor environment		N/A
22.11 (5.2.2)	Type of cable.....:		N/A
	Nominal cross-sectional area (mm²)..... :		N/A
	Cables equal to IEC 60227 or IEC 60245		N/A
22.11 (5.2.3)	Type of attachment, X, Y or Z		N/A
22.11 (5.2.5)	Type Z not connected to screws		N/A
22.11 (5.2.6)	Cable entries:		N/A
	- suitable for introduction		N/A
	- adequate degree of protection		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.11 (5.2.7)	Cable entries through rigid material have rounded edges		N/A
22.11 (5.2.8)	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
22.11 (5.2.9)	Locking of screwed bushings		N/A
22.11 (5.2.10)	Cord anchorage:		N/A
	- covering protected from abrasion		N/A
	- clear how to be effective		N/A
	- no mechanical or thermal stress		N/A
	- no tying of cables into knots etc.		N/A
	- insulating material or lining		N/A
22.11 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
22.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
22.11 (5.2.10.3)	Tests:		N/A
	- impossible to push cable; unsafe		N/A
	- pull test: 25 times; pull (N)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- torque test: torque (Nm)..... :		N/A
	- displacement ≤ 2 mm		N/A
	- no movement of conductors		N/A
	- no damage of cable or cord		N/A
	- function independent of electrical connection		N/A
22.11 (5.2.10.4)	Luminaire with/designed for use with supply cord with maximum current of 2A:		N/A
	- Ordinary Class III luminaire supplied with SELV ≤ 25V RMS/60V DC		N/A
	- Ordinary Class III luminaire supplied with PELV ≤12V RMS/30V DC		N/A
	- Other than ordinary Class III luminaire supplied with voltage ≤12V RMS/30V DC		N/A
	Pull test of 30N		N/A
22.11 (5.2.11)	External wiring passing into luminaire		N/A
22.11 (5.2.12)	Looping- in terminals		N/A
22.11 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
22.11 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
22.11 (5.2.15)	Connectors for Class III luminaires (IEC 60603 or IEC 62680)		N/A
22.11 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Appliance inlet or connector systems (IEC 61984)		N/A
22.11 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
22.11 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- other standard		N/A
22.11 (5.3)	**Internal wiring**		P
22.11 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A)..... :		N/A
	- temperatures.....:	(see Annex 2)	N/A
	Green- yellow for protective earth only		N/A
22.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm²)..... :		N/A
	Insulation thickness (mm) .....:		N/A
	Extra insulation added where necessary		N/A
22.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Cross-sectional area (mm²)..... :	see Annex 1	P
22.11 (5.3.1.3)	Double or reinforced insulation for class II		P
22.11 (5.3.1.4)	Conductors without insulation		N/A
22.11 (5.3.1.5)	SELV/PELV current-carrying parts		P
22.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
22.11 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
22.11 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
22.11 (5.3.4)	Joints and junctions effectively insulated		N/A
22.11 (5.3.5)	Strain on internal wiring		N/A
22.11 (5.3.6)	Wire carriers		N/A
22.11 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N/A
22.11 (5.4)	**Test to determine suitability of conductors having a reduced cross-sectional area**		N/A
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N/A
	No damage to luminaire wiring after test		N/A
22.11.1 (-)	Permanently connected		P
22.12 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		P
22.12 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starter holders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Double-ended high-pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
22.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
22.12 (8.2.3.a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		P
	- glass protective shields not used as supplementary insulation		N/A
22.12 (8.2.3.b)	BC lamp holder of metal in class I luminaires shall be connected to protective earth		N/A
22.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V)……...:		N/A
	- interrupted DC voltage (V) ……:		N/A
	- touch current if applicable (mA) .....:		N/A
	One conductive part insulated if required		N/A
	Other than ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V)……...:		N/A
	- interrupted DC voltage (V) ……:		N/A
	Class III luminaire only for connection to SELV		N/A
	Class III luminaire not provided with means for protective earthing		N/A
22.12 (8.2.3.d)	PELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V)……...:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Other than ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V).....:		N/A
	One pole insulated if required		N/A
22.12 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A
22.12 (8.2.5)	Compliance with the standard test finger or relevant probe		P
22.12 (8.2.6)	Covers reliably secured		P
22.12 (8.2.7)	Luminaire other than below with capacitor > 0,5 μF not exceed 50 V 1 min after disconnection	4V after 1min	P
	Portable luminaire with capacitor > 0,1 μF (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 μF (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A

22.13 (12)	**ENDURANCE TEST AND THERMAL TEST**		P
22.13 (-)	If IP > IP 20 relevant test of (12.4), (12.5), (12.6) and (12.7) after (9.2) before (9.3) as specified in 22.14		—
22.13 (12.2)	**Selection of lamps and ballasts**		—
	Lamp used according Annex B	(Lamp used see Annex 2)	—
	Control gear if separate and not supplied	(Control gear used see Annex 2)	—
22.13 (12.3)	**Endurance test**		P
	a) mounting- position .....:	Normal used	—
	b) test temperature (°C).....:	50°C	—
	c) total duration (h) .....:	390h	—
	d) supply voltage (V).....:	1.1Un	—
	d) if not equipped with control gear, constant voltage/current (V) or (A) .....:		—
22.13 (12.3.1d)	d) Class III luminaires powered via information technology communication cable:		—
	- voltage under normal operation (V).....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- voltage under abnormal operation (V)……..:		—
	e) luminaire ceases to operate		—
	f) luminaire with constant light output function		—
22.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
22.13 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
22.13 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N/A
22.13 (12.6)	Thermal test (failed lamp control gear condition):		N/A
22.13 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) ..... :		—
	- case of abnormal conditions.....:		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un ....:		—
	- measured mounting surface temperature (°C) at 1,1 Un .....:		N/A
	- calculated mounting surface temperature (°C) .....:		N/A
	- track-mounted luminaires		N/A
22.13 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions.....:		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C) .....:		N/A
	- track-mounted luminaires		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.13 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
22.13 (12.7.1)	Luminaire without temperature sensing control		N/A
22.13 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W .....:		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions.....:		—
	- Ballast failure at supply voltage (V) .....:		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		N/A
	- case of abnormal conditions.....:		—
	- measured winding temperature (°C): at 1,1 Un.....:		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....:		—
	- calculated temperature of fixing point/exposed part (°C).....:		—
	Ball-pressure test.....:	See Test Table 22.16 (13.2.1)	N/A
22.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions.....:		—
	- measured winding temperature (°C): at 1,1 Un.....:		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....:		—
	- calculated temperature of fixing point/exposed part (°C).....:		—
	Ball-pressure test.....:	See Test Table 22.16 (13.2.1)	N/A
22.13 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions.....:		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.13 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link.....:	Yes☐ No☐	—
	- manual reset cut-out.....:	Yes☐ No☐	—
	- auto reset cut-out.....:	Yes☐ No☐	—
	- case of abnormal conditions.....:		—
	- highest measured temperature of fixing point/ exposed part (°C):.....:		—
	Ball-pressure test:.....:	See Test Table 22.16 (13.2.1)	N/A
22.13.1 (-)	Endurance test for self-contained luminaire		P
	Operate satisfactory during 50 supply switching		P
22.13.2 (-)	Thermal test 12.4 to 12.5 in IEC 60598-1	(see Annex 2)	P
22.13.3 (-)	Condition of tests		—
22.13.4 (-)	Battery discharge		—
22.13.5 (-)	Reduced temperature		—
22.13.6 (-)	Additional thermal test	(see Annex 2)	P
22.13.7 (-)	Provide Vmin according Clause 20 of IEC 61347-2-7 at the end of operation		P
22.14 (9)	**RESISTANCE TO DUST AND MOISTURE**		P
22.14 (-)	If IP > IP 20 the order of tests as specified in clause 22.12		P
22.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP.....:	IP20	—
	- mounting position during test.....:	Normal mounting	—
	- fixing screws tightened; torque (Nm).....:	--	—
	- tests according to clauses.....:	Clause 9.2.0	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		N/A
	c.1) For luminaires without drain holes – no water entry		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight, pressure watertight, high pressure and temperature water jet-proof or high pressure and cold water jet-proof luminaire		N/A
	e) no contact with live parts (IP 2X)		P
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		N/A
22.14 (9.3)	Humidity test 48 h	93%RH, 25℃, 48h	P
22.15 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		P
22.15 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....:		—
	Insulation resistance (MΩ):		—
	SELV/PELV:		P
	- between current-carrying parts of different polarity:		N/A
	- between current-carrying parts and mounting surface.....:	>100 MΩ	P
	- between current-carrying parts and metal parts of the luminaire.....:	>100 MΩ	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
	Other than SELV/PELV:		P
	- between live parts of different polarity..... :	>100 MΩ	P
	- between live parts and mounting surface.....:	>100 MΩ	P
	- between live parts and metal parts.....:	>100 MΩ	P
	- between live parts of different polarity through action of a switch.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 .....:		N/A
22.15 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V):		P
	SELV/PELV		P
	- between current-carrying parts of different polarity:		N/A
	- between current-carrying parts and mounting surface.....:	500V	P
	- between current-carrying parts and metal parts of the luminaire.....:	500V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 .....:		N/A
	Other than SELV/PELV:		P
	- between live parts of different polarity..... :	1480V	P
	- between live parts and mounting surface.....:	2960V	P
	- between live parts and metal parts.....:	2960V	P
	- between live parts of different polarity through action of a switch..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 .....:		N/A
22.15 (10.3)	Touch current (mA).....:		N/A
	Protective conductor current (mA).....:	Touch current: Max. 0.103mA	P

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Clause	Requirement + Test	Result - Remark	Verdict
22.16 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		P
22.16 (13.2.1)	Ball-pressure test..... :	See Test Table 22.16 (13.2.1)	P
22.16 (13.3.1)	Needle-flame test (10 s).....:	See Test Table 22.16 (13.3.1)	P
22.16 (13.3.2)	Glow- wire test (650°C).....:	See Test Table 22.16 (13.3.2)	P
22.16 (13.4)	Proof tracking test (IEC 60112).....:	See Test Table 22.16 (13.4)	P
22.17 (-)	**PHOTOMETRIC DATA**		P
22.17.1 (-)	Intensity distribution data provided		P
22.17.2 (-)	If declared values in cd/1 000 lm, reference flux in emergency mode provided		N/A
22.17.3 (-)	At least 50% of level declared photometric data 5 s after failure of supply		P
	100% of level declared photometric data		P
	- after 60 s		P
	- after 0,5 s after failure of supply if high-risk task-area lighting		N/A
	Photometric measurements according CIE 121 SP1		P
	LED luminaires measurements according CIE S025		P
	All values at least minimum declared data		P
22.17.4 (-)	Colour-rendering index		P
22.17.5 (-)	Internally illuminated emergency safety sign meets requirements of ISO 30061		N/A
	Luminance of permanently illuminated safety sign meet requirements of ISO 3864-1 and ISO 3864-4		N/A
	Luminance measurements according Annex C	(see Annex C)	N/A
22.18 (-)	**CHANGEOVER OPERATION**		P
	Changeover device comply with Clause 21 of IEC 61347-2-7		P
22.19 (-)	**HIGH TEMPERATURE OPERATION**		P
	Operation at 70°C		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Relative light outputs		P
22.20 (-)	**BATTERY CHARGERS FOR SELF-CONTAINED EMERGENCY LUMINAIRES**		P
	Devices for recharging batteries comply with Clause 22 of IEC 61347-2-7		P
22.21 (-)	**TEST DEVICES FOR EMERGENCY OPERATION**		P
22.21.1 (-)	Self-contained luminaire provided with test facility		P
22.21.2 (-)	Remote testing device not influence proper function of safety illumination		N/A
22.21.3 (-)	Indicators colour according IEC 60073		P

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Clause	Requirement + Test	Result - Remark	Verdict

22.8 (11.2)	**TABLE I: Creepage distances and clearances**							**P**
	Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages							**P**
	Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*							**P**
	Insulation type **	**Measured clearance**	**Required**		**Measured creepage**	**Required**		
			clearance	***Table**		**creepage**	***Table**	
Distance 1:	B	>3.0	1.5	Table 11.1.B	>3.0	2.5	Table 11.1.A	
Distance 2:	B	>8.0	1.5	Table 11.1.B	>8.0	2.5	Table 11.1.A	
Distance 3:	B	>8.0	1.5	Table 11.1.B	>8.0	2.5	Table 11.1.A	
Distance 4:	B	3.2	1.5	Table 11.1.B	3.2	2.5	Table 11.1.A	
Distance 5:	B	2.8	1.5	Table 9	2.8	2.5	Table 7	
Distance 6:	R	6.8	3.0	Table 9	6.8	5.0	Table 7	
Distance 7:	R	6.8	3.0	Table 9	6.8	5.0	Table 7	
Distance 8:	R	>7.0	3.0	Table 9	>7.0	5.0	Table 7	
Distance 9:	R	>7.0	4.7	IEC61558-1	>7.0	5.0	IEC61558-1	
Working voltage (V)..... :					Max. 240V			—
PTI..... :					< 600 ☒ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) ..... :					--			—

Supplementary information:
Distance 1: Between L and N on terminal block.
Distance 2: Between live parts on terminal block and accessible metal parts or mounting surface.
Distance 3: Between LED PCB board and accessible parts or mounting surface
Distance 4: Between L and N before fuse
Distance 5: Between pins of fuse
Distance 6: Between Y capacitor (CY1)
Distance 7: Between input circuits and output circuits on PCB board
Distance 8: Between transformer core and secondary winding
Distance 9: Between transformer Primary circuit trace to secondary circuit trace on PCB

** Insulation type: B – Basic; S – Supplementary; R – Reinforced. See also IEC 60598-1 Annex M.

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Clause	Requirement + Test	Result - Remark	Verdict

22.16 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm) .....:		2,0mm		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Lamp cover	See Annex 1	75	1.0	
Plastic enclosure	See Annex 1	75	1.0	
PCB of driver	See Annex 1	125	0.8	
Bobbin of driver	See Annex 1	125	0.8	
Connector	See Annex 1	125	1.4	
Supplementary information:--				

22.16 (13.3.1)	TABLE: Needle-flame test (IEC 60695-11-5)				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
PCB of driver	See Annex 1	10s	No	0s	P
Bobbin of driver	See Annex 1	10s	No	0s	P
Connector	See Annex 1	10s	No	0s	P
Supplementary information:--					

22.16 (13.3.2)	TABLE: Resistance to heat and fire - Glow wire tests						P
Object/ Part No./ Material	**Manufacturer/ trademark**	**Glow wire test (°C)**					**Verdict**
		650		**750**		**850**	
		te	**ti**	**te**	**ti**		
Plastic enclosure	See Annex 1	--	--	--	--	0s	P
Driver PCB	See Annex 1	0s	0s	--	--	--	P
Lens	See Annex 1	0s	0s	--	--	--	P
Ignition of the specified layer placed underneath the test specimen (Yes/No).....:							No
Supplementary information:--							

22.16 (13.4)	TABLE: Proof tracking test (IEC 60112)	P

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Clause	Requirement + Test	Result - Remark	Verdict

Test voltage PTI ..... :		175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Lens	See Annex 1	No burning	No burning	No burning	P
Plastic enclosure	See Annex 1	No burning	No burning	No burning	P
Supplementary information:--					

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Clause	Requirement + Test	Result - Remark	Verdict

	Annex A: Batteries for self-contained emergency luminaires		P
A.1	Type of batteries	Li-ion Battery	P
A.2	Battery conform to relevant standard	IEC 62133	P
	Luminaire operate within specific tolerances		P
A.3	Battery capacity		P
A.4	**Sealed nickel cadmium batteries**		N/A
A.4.1	Battery conform to IEC 61951-1		N/A
A.4.2.a	Maximum surface temperature of the battery °C..... :	--	N/A
A.4.2.b	Maximum overcharge rate 0,08 C_5A		N/A
A.4.2.c	Minimum ambient temperature of the cells 5 °C		N/A
A.4.2.d	Maximum discharge rates		N/A
A.5	**Sealed nickel metal-hydride batteries**		N/A
A.5.1	Battery conform to IEC 61951-2		N/A
A.5.2.a	Maximum case temperature of the battery °C.....:	--	N/A
A.5.2.b	Maximum overcharge rate 0,08 C_5A		N/A
A.5.2.c	Minimum ambient temperature of the cells 5 °C		N/A
A.5.2.d	Maximum discharge rates		N/A
A.6	**Valve regulated lead acid batteries**		N/A
A.6.1	Battery conform to relevant part of IEC 60869-21 or IEC 61056-1		N/A
A.6.2.a	Maximum surface temperature of the battery °C..... :	--	N/A
A.6.2.b	Maximum recharge current 0,4 C20		N/A
A.6.2.c	Maximum discharge rates		N/A
A.6.2.d	Maximum r.m.s. ripple current 0,1 C_{20}		N/A
A.6.2.e	Minimum ambient temperature of the cells 5 °C		N/A
A.7	Ambient temperature of the cells measured after 48 h		N/A
A.8	Alternative operating parameters and evidence if operating outside limits in A.4 and A.5		N/A
A.9	Battery only replaced by a competent person		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Annex B: Luminaire classification		P
	Classified and marked according Annex B.....:	See the rating label	P
	Annex C: Luminance measurements		N/A
C.1	Contrast measurements		N/A
C.2	On site photometric tests		N/A
	according to Annex C of ISO 3864-4		N/A
	Measured values not less than specified in this standard		N/A
	Annex D: Rest mode and inhibition mode facilities		N/A
	The main characteristics of rest mode are:		N/A
	a) it can only be operated when the normal supply has failed, enabling battery capacity to be conserved if not needed		N/A
	b) the remote control wiring is fail-safe against short circuit, contact to earth or interruption		N/A
	c) at the restoration of the normal supply, the luminaire reverts to normal mode		N/A
	The main characteristics of inhibition mode are as follows:		N/A
	a) It can be set independently from the condition of the normal power and therefore when the building is unoccupied, a supply failure or disconnection will not cause an unwanted discharge		N/A
	b) The protection against the interruption of the wiring to the remote control should be provided by a proper installation according to the relevant wiring rules of IEC 60364-5-56 concerning safety services as follows:		N/A
	1) Circuits of safety services should be independent of other circuits		N/A
	2) Circuits of safety services should not pass through locations exposed to fire risk unless they are fire-resistant. The circuits should not in any case pass through zones exposed to explosion risk		N/A
	3) The protection against overload may be omitted		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	4) Overcurrent protective devices should be used so as to avoid an overcurrent in one circuit impairing the correct operation of other circuits of safety services		N/A
	5) Switchgear and controlgear should be clearly identified and grouped in locations accessible only to competent persons		N/A
	6) Alarm devices should be clearly identified		N/A
	Annex E: Requirements for self-contained portable emergency luminaires		N/A
E.5	**Classification of luminaires**		N/A
	Base unit and portable emergency luminaires with mains-voltage supplied integrated charger of Class I or Class II		N/A
	Self-contained portable emergency luminaire without integrated mains-voltage supplied charger of Class III		N/A
E.5.1	Classified according construction		—
E.5.1.a	Control unit contained in the self-contained portable emergency luminaire	Yes ☐ No ☐	—
E.5.1.b	Part of the control unit remains in the base unit	Yes ☐ No ☐	—
E.5.2	Classified according operation		—
E.5.2.a	Automatic initiation with manual control	Yes ☐ No ☐	—
E.5.2.b	Automatic initiation with automatic control	Yes ☐ No ☐	—
E.5.2.c	Manual control	Yes ☐ No ☐	—
E.5.3	Classified according photometric performance		—
	Distribution measured according IEC TR 61341		N/A
E.5.3.a	Narrow beam angels not greater than 15°		N/A
E.5.3.b	Medium beam angels between 15° and 25°		N/A
E.5.3.c	Wide beam angels greater than 25°		N/A
E.5.3.d	Variable beam angels – state the range of angels		N/A
E.6	**Marking**		N/A
E.6.1	Marking visible after installation		N/A
	Marking on both parts if separate charging device		N/A
	Class II symbol only on the charger if separate charging device		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
E.6.2	Instruction for electrical, mechanical and use according classification		N/A
E.6.3	Warning notice on both parts to return the luminaire to base unit for recharging after use		N/A
E.6.4	Instruction with photometric data		N/A
E.7	**Construction**		N/A
E.7.1	Control unit completely contained in the luminaire or part of the control unit in the base unit		N/A
E.7.2	Mechanical strength tests according 4.13 of IEC 60598-1		N/A
	Mechanical strength tests according 4.13.4 of IEC 60598-1 of portable section		N/A
E.7.3	Base unit permanently connected to unswitched supply		N/A
E.7.4	Integral manual switch used to switch the unit between inhibit mode and emergency mode and vice versa		N/A
	Recharging before supply voltage reach 0,85 times nominal value		N/A
E.7.5	Integral over current protection device connected immediately after the terminals connecting to the supply		N/A
E.7.6	Power supply connection between the luminaire and its base unit made without a tool		N/A
	Connecting devices according relevant standard		N/A
E.7.7	No access to live parts during or after connection or disconnection		N/A
E.7.8	Supply cable disconnected from the portable part before use		N/A
E.7.9	Connection between the portable part and the charger mechanically interlocked to prevent incorrect polarised connection		N/A
E.7.10	At least two independent replaceable lamps if incandescent lamps		N/A
E.7.11	Colour rendering index of any emergency lamps *Ra* 40 or better		N/A
E.7.12	Audible and/or visible warning on re-instatement of normal supply		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
E.7.13	Failure of the mains supply the luminaire operate in emergency mode or an indicator identify the location of the luminaire		N/A
	Load ≤ 0,01C5/h of the battery if indicator is used		N/A
E.7.14	Indicator give warning of low battery capacity remaining		N/A
E.7.15	Adequate stability		N/A
	Test at an angle of 15° to the horizontal		N/A
E.7.16	Adequate stability to illuminate the task area on non-horizontal surface		N/A
	Test at an angle of 15° to the horizontal		N/A
E.8	**Changeover operation**		N/A
	Requirements according 22.7.10 excluded if integral manual switch		N/A
	Design avoid switching of charger whilst holding the luminaire		N/A
E.9	**High temperature operation**		—
	Ambient temperature of 40°C in Clause 22.19		—
E.10	**Thermal test**		—
	Test made with portable part either placed on dull black painted wooden floor or rest against a dull black painted wooden wall		—

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1	TABLE: Critical components information					P
Object / part No.	**Code**	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Plastic enclosure	C	CHI MEI CORPORATION	PC-6710(a)	PC,V-0,130℃	--	UL E56070
LED cover	C	CHI MEI CORPORATION	PC-6710(a)	PC,V-0,130℃	--	UL E56070
Terminal block	B	BJB GmbH & Co. KG	46.413	AC450V; T85; 24A/16A; 0,5…2,5mm²	DIN EN 60998-2-2	VDE 40034941
LED PCB	C	NINGBO KJPCB ELECTRONIC TECHNOLOGY CO LTD	KJ-02	V-0;;Max 1,5mm;130℃	--	UL E474795
LED	C	EVERLIGHT ELECTRONICS CO., LTD	SMD2835	Ra>80; Tc: 2700-6500K	IEC TR 62778	Tested with appliance
Input wire of driver	B	Xiangshan Fahua Electric Wire & Cable Co., Ltd.	H05V-U	1 x 0,75 mm²	VDE 0285-525-2-31	VDE 40031495
Plastic enclosure of driver	C	CHI MEI CORPORATION	PC-6710(a)	PC,V-0,130℃	--	UL E56070
Output wire of driver/ LED / Indicator	B	RUIAN XINZHOU WIRE & CABLE CO LTD	1015	18-24AWG; 600V,105℃	--	UL E308748
PCB	C	KINGBOARD LAMINATES HOLDINGS LTD	KB-5150 KB-5152	V-0	--	UL E123995
Fuse	B	Shenzhen Lanson Electronics Co. Ltd.	SMT T2A250V	250VAC; 2A	DIN EN 60127-1	VDE 40012592
X-cap	B	Dain Electronics Co., Ltd.	MEX	0,47uF Max, 275V/310V, 40/110/21	DIN EN 60384-14	VDE 40018798
Varistor	B	Hongzhi Enterprises Ltd.	HEL10D471K,	470V, 125℃	DIN EN 61051-1	VDE 40037512
Y-cap	B	Hongzhi Enterprises Ltd.	X1Y1	AC400V, 2200pF 125℃	DIN EN 60384-14	VDE 40038760
Winding	C	HANGZHOU WEIFENG ELECTRONIC CO LTD	MW 79-C	155°C	--	UL E229341
Bobbin	C	SUMITOMO BAKELITE CO LTD	PM-9820	150,V-0,	--	UL E41429

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Clause	Requirement + Test	Result - Remark	Verdict

Triple insulation wire	B	Wuhu Ouiy Electronics Co., Ltd.	OLTIW-F	Class F	DIN EN 62368-1	VDE 40040893
Teflon Tube	C	CHANGYUAN ELECTRONICS (SHENZHEN) CO LTD	CB-TT-T CB-TT-L CB-TT-S	200°C	--	UL E180908
Insulation tape	C	Jingjiang Yahua Pressure Sensitive Glue Co Ltd	CT-280, PZ	130 degree C	--	UL:E165111
Connector (white)	C	NEO-NEON LED LIGHTING INTERNATIONAL LTD	YY-058	PVC; V-0	--	UL E201139
Connector (black/red)	C	CWB GROUP CO LTD	VH-2A	300VAC; 10A	--	UL E200881
Opto-coupler	B	Everlight Electronics Co., Ltd.	CNY64	110℃,reinforced insulation>=9.7mm	IEC 60474-5-5	VDE 40027351
Battery	B	Shangdong zhongxin Dison Power Supply Co.,Ltd	IFR 18650-1.6Ah	3.2V, 1600mAh, 2pcs	IEC 62133-2	JPTUV-098723
Test switch	C	SHENZHEN HONGJU ELECTRONICS CO.,LTD	PB-05B	3A,125V	IEC 61058.1	Tested with appliance

Supplementary information:

[1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

The codes above have the following meaning:

A- The component is replaceable with another one, also certified, with equivalent characteristics

B- The component is replaceable if authorised by the test house

C- Integrated component tested together with the appliance

D- Alternative component

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference.....:	DS-EL-01M	—
	Lamp used.....:	LED lamp	—
	Lamp control gear used.....:	Integral LED driver	—
	Mounting position of luminaire.....:	Mounting acc. to user manual	—
	Supply wattage (W).....:	See below	—
	Supply current (A)..... :	See below	—
	Calculated power factor.....:	See below	—
	Table: measured temperatures corrected for ta = 40 °C:		P
	- abnormal operating mode.....:	Replacement of batteries with a short-circuit link across the battery charger output: the batteries is unit shut down.	—
	- test 1: rated voltage..... :	--	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....:	a, Charge mode: 1.06x240V=254.4V(0.052A, 5.64W, 0.423PF); b, Discharge mode: 6.61VDC, 0.291A, 1.92W	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage..... :	--	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....:	--	—
	Through wiring or looping-in wiring loaded by a current of A during the test .....:	--	—

Temperature measurements, (°C)

Part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2a normal operating mode	test 2b emergency lighting mode	limit	test 4	limit
Terminal block	--	44.5	42.2	85	--	--
Input wire of driver	--	47.2	43.5	90	--	--
L1 winding	--	56.1	44.2	150	--	--
L1 bobbin	--	53.4	43.7	155	--	--

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Clause	Requirement + Test	Result - Remark	Verdict

X-cap(CX1)	--	54.8	42.6	110	--	--
C15	--	56.7	42.5	105	--	--
L2	--	57.5	42.6	150	--	--
T1 winding	--	58.6	42.8	150	--	--
T1 bobbin	--	57.1	41.7	155	--	--
CY1	--	56.5	41.9	125	--	--
Driver PCB	--	54.1	43.8	130	--	--
CN4	--	47.2	41.0	130	--	--
CN5	--	46.9	41.2	130	--	--
Wire for battery	--	46.0	43.1	105	--	--
Battery surface	--	47.6	46.0	55	--	--
Wire near LED	--	48.9	47.5	105	--	--
LED PCB	--	50.6	48.9	130	--	--
Lamp cover	--	44.3	43.7	130	--	--
Mounting surface	--	43.3	41.5	90	--	--
Ambient	--	40.0	40.0	--	--	--

ANNEX 2	**TABLE: Temperature measurements, thermal tests of Section 12**		P
	Type reference.....:	DS-EL-04M	—
	Lamp used.....:	LED lamp	—
	Lamp control gear used.....:	Integral LED driver	—
	Mounting position of luminaire.....:	Mounting acc. to user manual	—
	Supply wattage (W).....:	See below	—
	Supply current (A)..... :	See below	—
	Calculated power factor.....:	See below	—
	Table: measured temperatures corrected for ta = 40 °C:		P
	- abnormal operating mode.....:	Replacement of batteries with a short-circuit link across the battery charger output: the batteries is unit shut down.	—
	- test 1: rated voltage.....:	--	—

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....:	a, Charge mode: 1.06x240V=254.4V(0.05A, 5.57W, 0.41PF); b, Discharge mode: 6.58VDC, 0.288A, 1.89W	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage..... :	--	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....:	--	—
	Through wiring or looping-in wiring loaded by a current of A during the test .....:	--	—

Temperature measurements, (°C)

Part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2a normal operating mode	test 2b emergency lighting mode	limit	test 4	limit
Battery surface	--	53.5	46.8	55	--	--
Wire near LED	--	88.6	50.9	105	--	--
LED PCB	--	92.2	54.1	130	--	--
Lamp cover	--	90.7	52.0	130	--	--
Mounting surface	--	48.2	41.8	90	--	--
Ambient	--	40.0	40.0	--	--	--

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 3	**Screw terminals (part of the luminaire)**		N/A
(14)	**SCREW TERMINALS**		N/A
(14.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm²).....:		—
(14.3.3)	Conductor space (mm).....:		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread).....:	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm).....:		N/A
	Torque (Nm).....:		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N).....:		N/A
(14.4.8)	Without undue damage		N/A

ANNEX 4	**Screwless terminals (part of the luminaire)**		N/A
(15)	**SCREWLESS TERMINALS**		N/A
(15.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(15.3.1)	Material		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples)..... :		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)..... :		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A
15.6.2	Mechanical tests		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....:		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) .....:		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

(15.6.3.1) **(15.6.3.2)**	**TABLE: Contact resistance test / Heating tests**									N/A
	Voltage drop (mV) after 1 h									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop of two inseparable joints									N/A
	Voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV).....:									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV).....:									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV).....:									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV).....:									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Supplementary information:--										

	ANNEX 5: EMF test result according to IEC 62493	P
4	**LIMITS**	P
4.1	**General**	P

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Comply with Van der Hoofden test limit in 4.2.3 or inherently compliant in 4.2.2 and pass assessment procedure for intentional radiators in 4.3		P
4.2	**Unintentional radiating part of lighting equipment**		P
4.2.2	Lighting equipment deemed to comply with the Van der Hoofden test without testing		P
	1) electronic controlgear	Yes☐ No☒	—
	2) incandescent-lamp technology	Yes☐ No☒	—
	3) LED-light-source technology	Yes☒ No☐	—
	4) OLED-light-source technology	Yes☐ No☒	—
	5) high-pressure discharge lamp LED-light-source technologies	Yes☐ No☒	—
	6) low-pressure discharge lamp technologies with exposure distance ≥ 50 cm	Yes☐ No☒	—
	7) independent auxiliary	Yes☐ No☒	—
	Not fulfil any of 1-7 above subject to 4.2.3		—
4.2.3	Applications of limits		N/A
	Not fulfil any of 1-7 in 4.2.2 but the compliance factor *F* is ≤ 1		N/A
4.3	**Intentional radiating part of lighting equipment**		N/A
	Comply with one of methods in Clause 7 if intentional radiator		N/A

6	**MEASUREMENT PROCEDURE FOR THE VAN DER HOOFDEN TEST**		N/A
6.1	**General**		N/A
	Measurements carried out under conditions according Clause 6.1 – 6.6	See Table 6	N/A

7	**ASSESSMENT PROCEDURE INTENTIONAL RADIATORS**		N/A
7.2	**Low-power exclusion method**		N/A
7.2.1	Input $P_{int,rad}$.....:		—
	Exclusion level P_{max}.....:		—
	Input power $P_{int,rad}$ < exclusion level P_{max}		N/A
7.3	**Application of the EMF product standard for body worn-equipment**		N/A
	If not Clause 7.2 is met and expose distance ≤ 0.05 m, comply with IEC 62209-2		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

7.4	**Application of the EMF product standard for base stations**		N/A
	If not Clause 7.2 is met and if intentional radiator is base station, comply with IEC 62232		N/A
7.5	**Application of another EMF standard**		N/A
	If not Clause 7.2 is met and if intentional radiator cannot be considered as in Clause 7.3 or 7.4, comply with IEC 62311		N/A

6	**TABLE: Measurement results with Van der Hoofden test head**				N/A
Location of EUT	Test model	Measuring distance	Result(F)	Limit(F)	Verdict
Reference Annex B of IEC 62493:2015	--	--	--	≤1.0	N/A

Attachment No.1

IEC 60598_2_22F-ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60598-2-22
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

Luminaires

Part 2: Particular requirements

Section 22: LUMINAIRES FOR EMERGENCY LIGHTING

Differences according to..... : EN 60598-2-22:2014+A1:2020 used in conjunction with EN IEC 60598-1:2021

	CENELEC COMMON MODIFICATIONS (EN)	P

22.6 (3)	**MARKING**		N/A
22.6 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package		N/A

22.7 (4)	**CONSTRUCTION**		N/A
3.6 (4.11.6)	Electro-mechanical contact systems		N/A

22.7 (5)	**EXTERNAL AND INTERNAL WIRING**		N/A
22.7 (5.2.1)	Connecting leads		N/A
	- without a means for connection to the supply		N/A
	- terminal block specified		N/A
	- relevant information provided		N/A
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N/A
22.7 (5.2.2)	Cables equal to EN 50525		N/A
	Replace table 5.1 – Supply cord		N/A

22.13 (12)	**ENDURANCE TESTS AND THERMAL TESTS**		**P**
22.13 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		P

Attachment No.1

IEC 60598_2_22F-ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		N/A
(3.3)	DK: power supply cords of class I luminaires with label		N/A
(4.5.1)	DK: socket- outlets		N/A
(5.2.1)	CY, DK, FI, GB: type of plug		N/A

ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		N/A
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N/A
	FR: Safety requirements for high buildings (Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage) Glow-wire test for outer parts of luminaires:		N/A
	- 850°C for luminaires in stairways and horizontal travel paths		N/A
	- 650°C for indoor luminaires		N/A
(13.3)	GB: Requirements according to United Kingdom Building Regulation		N/A

Attachment No.2

IEC 62031
LED modules for general lighting - Safety specifications

Clause	Requirement + Test	Result - Remark	Verdict
4.2	Classification		---
	Built-in……:	Yes☐ No☒	—
	Independent……..…:	Yes☐ No☒	—
	Integral……..:	Yes☒ No☐	—
4.6	Independent modules comply with requirements in IEC 60598-1:2020		N/A
4.8	Modules with integrated controlgear providing SELV comply with requirements according to IEC 61347-1:2015/AMD1:2017 clause L.5 to L.11.	(see Annex 1)	N/A
6	Marking		N/A
6.2	Contents of marking for built-in and for independent LED modules		N/A
6.3	Location of marking for built-in LED modules		N/A
6.4	Location of marking for independent LED modules		N/A
6.5	Marking of integral LED modules		P
6.6	Durability and legibility of marking		N/A
7	Terminals		N/A
8 (9)	EARTHING		N/A
9 (10)	Protection against accidental contact with live parts		N/A
10 (11)	Moisture resistance and insulation		P
11 (12)	Electric strength		P
12 (14)	Fault conditions		P
12.1	Fault conditions according to IEC 61347-1, Clause 14		P
12.2	Overpower condition	No damage	P
14 (15)	Construction		P
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	Printed circuits		P

Attachment No.2

IEC 62031 LED modules for general lighting - Safety specifications			
Clause	Requirement + Test	Result - Remark	Verdict
	Printed circuits used as internal connections complies with clause 14		P
15 (16)	Creepage distances and clearances		N/A
16 (17)	Screws, current-carrying parts and connections		N/A
17 (18)	Resistance to heat, fire and tracking		N/A
18	Resistance to corrosion		N/A
20	Heat management		N/A
22	Photobiological safety		P
22.1	UV radiation		N/A
22.2	Blue light hazard		P
	Assessed according to IEC TR 62778		P
22.3	Infrared radiation		N/A

Attachment No.3

IEC TR 62778 Photobiological safety of lamps and lamp systems			
Clause	Requirement + Test	Result - Remark	Verdict

	Spectroradiometric measurement (IEC TR 62778:2014)		**P**
	Measurement performed on:	**Luminaire**	--
	Model number.....:	DS-EL-01M	--
	Test voltage (V).....:	240VAC	--
	Test current (mA).....:	--	--
	Test frequency (Hz).....:	--	--
	Ambient, t (°C).....:	25,0	--
	Measurement distance.....:	☒ 20 cm ☐ ... cm	--
	Source size .....:	☒ Non-small ☐ Small : .... mm	--
	Field of view .....:	☐ 100 mrad ☒ 11 mrad ☐ 1,7 mrad (for small sources)	--

Item	Symbol	Units	Result	Risk Group
Correlated colour temperature	CCT	K	--	--
x/y colour coordinates	--	--	--	--
Blue light hazard radiance	L_B	W/(m²•sr¹)	89	☒ RG0: <100 ☐ RG1: <10000 ☐ RG2: <4000000
Blue light hazard irradiance	E_B	W/m²	--	--
Luminance	L	cd/m²	--	--
Illuminance	E	lx	--	--
Supplementary information:				

	Spectroradiometric measurement (IEC TR 62778:2014)		**P**
	Measurement performed on:	**Luminaire**	--
	Model number.....:	DS-EL-04M	--
	Test voltage (V).....:	240VAC	--
	Test current (mA).....:	--	--

Attachment No.3

IEC TR 62778 Photobiological safety of lamps and lamp systems			
Clause	Requirement + Test	Result - Remark	Verdict

	Test frequency (Hz)..... :	--	--
	Ambient, t (°C)..... :	25,0	--
	Measurement distance..... :	☒ 20 cm ☐ ... cm	--
	Source size ..... :	☒ Non-small ☐ Small : .... mm	--
	Field of view ..... :	☐ 100 mrad ☒ 11 mrad ☐ 1,7 mrad (for small sources)	--

Item	Symbol	Units	Result	Risk Group
Correlated colour temperature	CCT	K	--	--
x/y colour coordinates	--	--	--	--
Blue light hazard radiance	L_B	$W/(m^2 \cdot sr^1)$	15440	☐ RG0: <100 ☐ RG1: <10000 ☒ RG2: <4000000
Blue light hazard irradiance	E_B	W/m^2	--	--
Luminance	L	cd/m^2	--	--
Illuminance	E	lx	--	--
Supplementary information:				

Attachment No.4

IEC/EN 61347-2-7			
Clause	Requirement + Test	Result - Remark	Verdict
4 (4)	**GENERAL REQUIREMENTS**		**P**
- (4)	Insulation materials for double or reinforced insulation according requ irements in Annex N of IEC 61347-1	(see Annex N)	N/A
- (4)	Compliance of independent controlgear enclosure with IEC 60 598- 1		P
- (4)	Built-in magnetic ballast with double or reinforced insulation comply with Annex I of IEC 61347-1		N/A
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
- (4)	SELV controlgear comply with Annex L of IEC 61347-1	(see Annex L)	P
4 (-)	Each lamp type tested according clause 15 – 20, 22 and 34 and lamp with highest rated power in other tests		—
4 (-)	Controlgear with automatic test function tested according Annex K	(see Annex K)(for automatic test function.)	P

6 (6)	**CLASSIFICATION**		**P**
	Built-in controlgear ..... :	Yes☐ No☒	—
	Independent controlgear..... :	Yes☐ No☒	—
	Integral controlgear ..... :	Yes☒ No☐	—
	With automatic test function .....:	Yes☐ No☒	—

7 (7)	**MARKING**		N/A
7.1 (7.1)	Mandatory markings		N/A
	a) mark of origin		N/A
	b) model number or type reference		N/A
	c) symbol for independent controlgear, if applicable		N/A

Attachment No.4

IEC/EN 61347-2-7			
Clause	Requirement + Test	Result - Remark	Verdict
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)		N/A
	supply frequency (Hz)		N/A
	supply current (A)		N/A
	f) earthing symbol		N/A
	k) wiring diagram		N/A
	l) value of t_c		N/A
7.1 (-)	- open circuit voltage (V)		N/A
	- controlgear without enclosure marked with a) and b) above		N/A
	- type and current rating of fuse, if applicable		N/A
	- symbol if the controlgear comply with this part 2		N/A
	- symbol if the controlgear is provided with automatic test function		N/A
	- maximum working voltage between output terminals (V)		N/A
	- maximum working voltage between any output terminal and earth, if applicable (V)		N/A
7.1 (7.2)	Marking durable and legible		N/A
	Rubbing 15 s water, 15 s petroleum; marking legible		N/A
7.2 (7.1)	Information to be provided, if applicable:		N/A
	h) declaration on protection against accidental contact		N/A
	i) cross-section of conductors (mm²)		N/A
	j) number, type and wattage of lamp(s)		N/A
	n) additional heat sink		N/A
	- suitable for use only on battery supply not having a trickle or intermittent re-charging circuits		N/A
	- rated duration of operation (hr)		N/A
	- for use in luminaries for high-risk task area lighting		N/A

Attachment No.4

IEC/EN 61347-2-7			
Clause	Requirement + Test	Result - Remark	Verdict
	- proof against supply voltage polarity reversal		N/A
	- emergency ballast lumen factor (EBLF) for fluorescent lamp controlgear		N/A
	- emergency output factor (EOF_X) for LED controlgear		N/A
	- relevant output parameter for LED controlgear for emergency operation only		N/A
	- minimum and maximum output voltage load for LED controlgear providing constant current		N/A
	- limits of ambient temperature range within which the ballast will start and operate		N/A
	- type of insulation between the supply and the battery circuit (non, basic or double/reinforced)		N/A
	- recharge the battery normally after the test of 22.3		N/A
	- supply current for each lamp		N/A
	Information for correct battery selection:		N/A
	- technology of the battery		N/A
	- type designation		N/A
	- capacity		N/A
	- voltage		N/A
	- maximum charge current		N/A
	- minimum charge current		N/A
	- charge voltage limits		N/A
	- maximum discharge current		N/A
	- minimum discharge current		N/A
	- discharge voltage limits		N/A
	- temperature rating		N/A
	- type and manufacturer		N/A
	- information regarding the installation, commissioning and use if with automatic test function		N/A
8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		**P**
- (10.1)	Controlgear protected against accidental contact with live parts	Rely on the enclosure of luminaire	N/A

Attachment No.4

IEC/EN 61347-2-7			
Clause	Requirement + Test	Result - Remark	Verdict
- (A2)	Voltage measured with 50 kΩ		N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impendence device	(see Annex A)	P
- (10.1)	Lacquer or enamel not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V ..... :	4V	P
- (10.3)	Controlgear providing SELV		P
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		P
	No connection between output circuit and the body or protective earthing circuit		N/A
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N/A
	SELV outputs separated by at least basic insulation		P
	ELV conductive parts insulated as live parts		P
	Tests according Annex L of IEC 61347-1		P
- (10.4)	Accessible conductive parts in SELV circuits		P
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ..... :	--	N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor	Y1 type capacitor	P

Attachment No.4

IEC/EN 61347-2-7			
Clause	Requirement + Test	Result - Remark	Verdict
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
9 (8)	**TERMINALS**		N/A
- (8)	Screw terminals according section 14 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the controlgear	(see Annex 2)	N/A
	Screwless terminals according section 15 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the controlgear	(see Annex 3)	N/A
10 (9)	**PROVISION FOR PROTECTIVE EARTHING**		N/A
- (9.1)	Provisions for protective earthing		N/A
	Terminal complying with clause 9		N/A
	Locked against loosening and not possible to loosen by hand		N/A
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	Earthing via means of fixing		N/A
	Earthing terminal only used for the earthing of the control gear		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
- (9.2)	Provision for functional earthing		N/A
	Comply with clause 8 and 9.1		N/A
- (9.3)	Earth contact via the track on the printed board		N/A

Attachment No.4

IEC/EN 61347-2-7			
Clause	Requirement + Test	Result - Remark	Verdict
	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω .....:		N/A
- (9.4)	Earthing of built-in lamp controlgear		N/A
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
- (9.5)	Earthing via independent controlgear		N/A
- (9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω .....:	--	N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A
11 (11)	**MOISTURE RESISTANCE AND INSULATION**		P
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		P
	For basic insulation ≥ 2 MΩ .....:	>100MΩ	P
	For double or reinforced insulation ≥ 4 MΩ .....:	>100MΩ	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P

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Clause	Requirement + Test	Result - Remark	Verdict
12 (12)	**ELECTRIC STRENGTH**		**P**
- (12)	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	See Annex L	P
	Supplementary insulation, 2U + 1000 V		N/A
	Double or reinforced insulation, 4U + 2000 V	See Annex L	P
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N/A
15 (-)	**STARTING CONDITIONS**		**P**
	- after the switching test the ballast operate the lamps at rated operating voltage		P
	- the lamps start and operate from the appropriate mains operation reference ballast/circuit		P
16 (-)	**LAMP CURRENT** (only for fluorescent lamps)		N/A
	Lamp current not exceeding 125 % of that delivered to the same lamp when operated with a reference controlgear		N/A
17 (-)	**SUPPLY CURRENT**		**P**
	At the rated operating voltage, the supply current from the battery differ not more than ± 15 % from the marked value when operated with reference lamp		P

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Clause	Requirement + Test	Result - Remark	Verdict
18 (-)	**MAXIMUM CURRENT IN ANY LEAD (WITH CATHODE PREHEATING)**		N/A
	If fluorescent lamp, the current flowing in any cathode termination not exceed the value given in lamp data sheet of IEC 60081 and IEC 60901	(see appended table)	N/A
19 (-)	**LAMP OPERATING CURRENT WAVEFORMS** (only for fluorescent lamps)		N/A
	The peak current does not exceed 1,7 times the rated lamp current specified on lamp data sheets of IEC 60081 and IEC 60901 .....:	--	N/A
	The peak current does not exceed 3 times the measured r.m.s. lamp current .....:	--	N/A
20 (-)	**FUNCTIONAL SAFETY (EBLF, EOF_X)**		P
20.1	**Requirements for fluorescent lamp controlgear**		N/A
	The controlgear provide the necessary light output after change over to the emergency mode		N/A
	- lowest value measured at 60 s and V_1 or in steady conditions at V_{min} be retained and reach at least the declared EBLF .....:	--	N/A
	- value measured at 5 s and V_1 reach at reach least 50 % of declared EBLF .....:	--	N/A
	- controlgear declared for high-risk task area lighting, lowest value measured at 0,5 s and V_1 or in steady conditions at V_{min} be retained and reach at least the declared EBLF .....:	--	N/A
20.2	**Requirements for LED lamp controlgear**		P
20.2.1	Constant current LED controlgear: EOF_I and $I_{emergency}$		P
	- lowest value measured at 60 s and V_1 or V_{min} retained and reach at least the declared $I_{emergency}$ and EOF_I.....:	0.291A	P
	- value measured at 5 s and V_1 reach at least 50 % of current $I_{emergency}$ .....:	0.291A	P

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IEC/EN 61347-2-7			
Clause	Requirement + Test	Result - Remark	Verdict
	- controlgear declared for high-risk task area lighting, lowest value measured at 0,5 s and V_1 retained and reach at least the declared $I_{emergency}$ and EOF_I..... :	--	N/A
21 (-)	**CHANGE-OVER OPERATION**		**P**
	Change over from normal to emergency mode at not less than 0,6 times and not greater than 0,85 times rated supply voltage		P
	Change over voltage (V)..... :	146Vac (From normal model to emergency mode)	P
	Supply reduced within 0,5 s to 0,6 times rated voltage, emergency lamps operated		P
	Switching of supply at 0,85 times rated voltage for 500 cycles 2 s ″off″ and 2 s ″on″. After these cycles, supply reduced to 0,6 times rated voltage. Emergency lamps operated during emergency mode and after the test.		P
	Controlgear with rest mode: automatic changeover from rest mode to normal mode at not greater than 0.9 times rated supply voltage		N/A
22 (-)	**RECHARGING DEVICE**		**P**
	Recharging device provide the rated charge performance specified by the battery manufacturer to charge the battery within 24 h		P
	Transformers in the recharging device comply with relevant parts of IEC 61558-2-1, IEC 61558-2-6 and IEC 61558-2-16		P
22.1 (-)	Low temperature operation		P
	Charged battery for 48 h and then discharged until voltage indicated in table 2 is achieved at 20 °C ± 5 °C		P
	Charged battery at 0,9 times rated supply voltage at minimum ambient temperature for 24 h		P

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IEC/EN 61347-2-7			
Clause	Requirement + Test	Result - Remark	Verdict
	Simulating supply failure, lamp operated for rated duration of operation and at the end the battery voltage is at least V_{min} according clause 20		P
22.2 (-)	High temperature operation		P
	Charged battery for 48 h and then discharged until voltage indicated in table 2 is achieved at 20 °C ± 5 °C		P
	Charged at 0,9 times rated supply voltage at maximum ambient temperature for 24 h		P
	Simulating supply failure, lamp operated for rated duration of operation and at the end the battery voltage is at least V_{min} according clause 20		P
22.3 (-)	Abnormal operating condition		P
	Recharging device operated at 1,1 times rated supply voltage and maximum marked ambient temperature with battery disconnected and output short-circuited		P
	- no flames, molten material or flammable gases		P
	After the test period and short-circuit removed		P
	- the recharging device is safe		P
	- normal recharge if self-resetting or user-replaceable protective devices		P
22.4 (-)	Maximum output voltage		P
	Output voltage of recharging device ≤ 50 V r.m.s. at 1,1 times rated supply voltage with or without batteries connected (V)..... :	7.22Vdc	P
22.5 (-)	Battery charge and discharge characteristics		P
	Charged battery for 48 h and then discharged until voltage indicated in table 2 is achieved at 20 °C ± 5 °C		P
	Charged at 0,9 and 1,1 times rated supply voltage at 25 °C ± 2 °C for 24 h		P
	Current and voltage characteristics within those declared by controlgear manufacturer		P

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IEC/EN 61347-2-7			
Clause	Requirement + Test	Result - Remark	Verdict
22.6 (-)	Lamp failure		P
	Lamp failure do not interrupt charging current to battery and not impair the operation of the battery		P
23 (-)	**PROTECTION AGAINST EXCESSIVE DISCHARGE**		**P**
	Protection against polarity reversal of individual cells, limits the discharge current when the battery voltage has fallen to V_{low} according a) to c)		P
	- Discharge current (A) ..... :	0.0001A	P
	Protection system prevents any further discharge until the normal supply has been restored. Battery voltage not below V_{low} and discharge current not exceed a) to c)		P
	- Battery voltage (V) ..... :	6.61V	P
	- Discharge current (A) ..... :	0.291A	P
24 (-)	**INDICATOR**		**P**
	Compliance with 22.6.7 of IEC 60598-2-22		P
25 (-)	**REMOTE CONTROL, REST MODE, INHIBITION MODE**		N/A
25.1 (-)	No other changeover device than the switch between the battery and emergency lighting lamps		N/A
	Not contain manual or non-self-resetting switch isolating the emergency circuit from main supply		N/A
25.2 (-)	If rest mode facility, operation automatically revert to normal mode if restoration of normal supply		N/A
	If remote inhibiting facilities, provided with a means of connection to the remote inhibiting circuit		N/A
25.3 (-)	If for remote inhibiting facilities, in the emergency mode, not influenced by short circuit or contact to earth in the wiring to the remote control		N/A
	- Simulation of above faults in conjunction with tests of 28.2		N/A
25.4 (-)	Operation of remote control independent of the battery and mains supply		N/A
25.5 (-)	If rest mode facility in the emergency mode , not influenced by short circuit, contact to earth or interruption in the wiring to the remote control changeover device		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- Simulation of above faults in conjunction with tests of 28.2		N/A
25.6 (-)	If rest mode or inhibiting facilities, in rest mode, current drain from batteries not exceed the values in 25.6		N/A
	- Discharge current (A) ..... :	--	N/A
26 (-)	**TEMPERATURE CYCLING TEST AND ENDURANCE TEST**		P
26.a (-)	Temperature cycling test: 5 cycles;		P
	- 1 h at minimum ambient temperature (°C) ..... :	0°C	P
	- 1 h at maximum ambient temperature (°C) ..... :	40°C	P
26.b (-)	Endurance test 50 h at an ambient that produces tc; ambient temperature (°C) ..... :	40°C	P
	After test, controlgear restart and operate lamps at rated operating voltage		P
27 (-)	**POLARITY REVERSAL**		P
	If declared to be proof against polarity reversal, operating with reverse supply voltage for 1 h at maximum rated voltage		P
	After test, supply connected correctly, start and operate lamps normally		P
28 (14)	**FAULT CONDITIONS**		**P**
28.1 (14)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P

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Clause	Requirement + Test	Result - Remark	Verdict
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)	(see appended table)	P
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		P
- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	P
- (14.5)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ ..... :	>100MΩ	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.6)	Relevant fault condition tests with high-power supply		—
28.2 (-)	Short circuit, contact to earth or interruption in the wiring of the normal supply not influenced the emergency mode		P

29 (15)	**CONSTRUCTION**		**P**
- (15.1)	**Wood, cotton, silk, paper and similar fibrous material**		**P**
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	**Printed circuits**		**P**
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	**Plugs and socket-outlets used in SELV or ELV circuits**		**N/A**
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	**Insulation between circuits and accessible parts**		**P**
- (15.4.2)	SELV circuits		P
	Source used to supply SELV circuits:		P
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		P
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		P
	- another source		N/A
	Voltage in the circuit not higher than ELV		N/A
	SELV circuits insulated from LV by double or reinforced insulation		P
	SELV circuits insulated from non SELV circuits by double or reinforced insulation		N/A
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A
	SELV circuits insulated from other SELV circuits by basic insulation		N/A
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		P
- (15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		N/A
- (15.4.4)	Other circuits		N/A
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		N/A
- (15.4.5)	Insulation between circuits and accessible conductive parts		N/A
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		N/A
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		N/A
	- all conductive parts are connected together		N/A
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A
29.1.1 (-)	Compliance with 22.6.1, 22.6.7, 22.6.9, 22.6.11, 22.6.19 and 22.20 of IEC 60598-2-22 if applicable		P
29.1.2 (-)	Battery comply with Annex I		P
	Battery designed for at least 4 years of operation		P
	Battery only use for emergency functions		P
30 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
- (16.1)	**General**		P
- (16)	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L	(see Annex L)	P
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P	(see Annex P)	N/A
- (16.2)	**Creepage distances**		**P**
- (16.2.2)	Minimum creepage distances for working voltages		P
	Creepage distances according to Table 7	(see appended table)	P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8	(see appended table)	N/A
- (16.3)	**Clearances**		P

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Clause	Requirement + Test	Result - Remark	Verdict
- (16.3.2)	Clearances for working voltages		P
	Clearances distances according to Table 9	(see appended table)	P
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10	(see appended table)	N/A
	Clearances distances for reinforced insulation according to Table 11	(see appended table)	N/A
31 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		P
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	Electrical connections		P
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	Mechanical connections and glands		P
(4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....:	--	N/A
	Torque test: torque (Nm); part.....:	--	N/A
	Torque test: torque (Nm); part.....:	--	N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm)..... :	--	N/A
	- lampholder; torque (Nm)..... :	--	N/A
	- push-button switches; torque 0,8 Nm..... :	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
(4.12.5)	Screwed glands; force (Nm)..... :	--	N/A
32 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
- (18.1)	Ball-pressure test .....:	See IEC60598-2-22 part	P
- (18.2)	Test of printed boards .....:	See IEC60598-2-22 part	P
- (18.3)	Glow- wire test .....:	See IEC60598-2-22 part	P
- (18.4)	Needle flame test .....:	See IEC60598-2-22 part	P
- (18.5)	Tracking test .....:	See Test Table 32 (18.5)	N/A
33 (19)	**RESISTANCE TO CORROSION**		N/A
	- test according 4.18.1 of IEC 60598-1		N/A
	- adequate varnish on the outer surface		N/A
34	**Abnormal lamp conditions**		P
34.1	Controlgear not impair safety operated under abnormal conditions		P
34.2	Abnormal conditions for controlgear for fluorescent lamps		N/A
	a) lamp not inserted		N/A
	b) lamp does not start because cathode is broken		N/A
	c) de-active lamp		N/A
	d) lamp operates with rectifying effect		N/A
34.3	Abnormal conditions for d.c. supplied electronic step-down convertors for filament lamps		N/A
	Output voltage of the convertor not exceed 115% of rated output voltage under abnormal conditions		N/A
	a) lamp not inserted		N/A
	b) twice the number of lamps		N/A
	c) output terminals short-circuited		N/A
34.4	Abnormal conditions for controlgear for d.c. supplied electronic controlgear for LED modules		P
34.4.1	Length of output cable 20 cm and 200 cm in 34.4.2 or 34.4.3		P
34.4.2	Controlgear of constant voltage type		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	a) no LED module inserted		N/A
	b) double LED modules in parallel		N/A
	c) output terminals short-circuited		N/A
34.4.3	Controlgear of constant current type		P
	a) no LED module inserted (and all at same time)		P
	b) double LED modules in series		P
	c) output terminals short-circuited		P
34.5	Abnormal conditions for ballast for d.c. supplied electronic controlgear for discharge lamps		N/A
	a) lamp not inserted or does not ignite		N/A
	b) burner leaks		N/A
	c) lamp operates, but rectifies		N/A
34.6	Compliance		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact according 10.1 of IEC 61347-1 not impaired		P
	- insulation resistance ≥ 1 MΩ .....:	> 100 MΩ	P
35	**Protection of associated components**		**N/A**
35.1	**Controlgear for fluorescent lamps**		**N/A**
35.1.1	Peak voltage limits		N/A
	Voltage at output terminals not exceed maximum permitted peak value in Table 2 (V) .....:	--	N/A
35.1.2	Working voltage limits		N/A
	Voltage at output terminals not exceed declared maximum working voltage under normal operating, and from 5 s after start (V) .....:	--	N/A
35.1.3	Compliance		N/A
	Voltage in 35.1 and 35.2 in compliance with the limits, measured between output terminal and earth		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Voltage in 35.1 and 35.2 in compliance with the limits, measured between output terminals if the voltage present across insulation barriers within associated components		N/A
A	**ANNEX A IN PART 1: TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		N/A
A.1	Comply with A.2 or A.3		N/A
A.2	Voltage ≤ 35 V peak or ≤ 60 V d.c .....:		N/A
A.3	If voltage > 35 V peak or > 60 V d.c. or protective impendence device; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. .....:	--	N/A
	Comply with Annex G of IEC 60598-1		N/A
C	**ANNEX C IN PART 1: PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING**		N/A
C3	**GENERAL REQUIREMENTS**		N/A
C3.1	Thermal protection means integral with the controlgear, protected against mechanical damage		N/A
	Renewable only by means of a tool		N/A
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with IEC 60691		N/A
	Electrical controls comply with IEC 60730-2-3		N/A
C3.2	No risk of fire by breaking (clause C7)		N/A
C5	**CLASSIFICATION**		N/A
	a) automatic resetting type		—

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Clause	Requirement + Test	Result - Remark	Verdict
	b) manual resetting type		—
	c) non-renewable, non-resetting type		—
	d) renewable, non-resetting type		—
	e) other type of thermal protection; description ... :	Electronic circuit	—
C6	**MARKING**		N/A
C6.1	Symbol for temperature declared thermally protected controlgear		N/A
C6.2	Declaration of the type of protection provided		N/A
C7	**LIMITATION OF HEATING**		N/A
C7.1	Preselection test:		N/A
	Test sample placed for at least 12 h in an oven having temperature (t_c - 5) K		N/A
	No operation of the protection device		N/A
C7.2	Functioning of protection means:		N/A
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N/A
	No operation of the protection device		N/A
	Introducing of the most onerous test condition determined during test of clause 14		N/A
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Controlgear according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Controlgear according to C5 b) working 6 times		N/A
	Controlgear according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
D	**ANNEX D IN PART 1: REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		N/A
	Tests in C7 performed in accordance with Annex D, if applicable		N/A
F	**ANNEX F IN PART 1: DRAUGHT-PROOF ENCLOSURE**		P
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		P
H	**ANNEX H IN PART 1: TESTS**		P
	All tests performed in accordance with the advice given in Annex H, if applicable		P
I (-)	**ANNEX I IN THIS PART 2: BATTERIES FOR EMERGENCY LUMINAIRES** (Annex numbers between parentheses refer to IEC 60598-2-22)		P
(A.1)	Type of batteries	Li-ion	P

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Clause	Requirement + Test	Result - Remark	Verdict
(A.2)	Conform to relevant standard		P
	Operate within specific tolerance		P
(A.3)	Battery capacity for rated duration up to time of replacement		P
(A.4)	Sealed nickel cadmium batteries		N/A
(A.4.1)	Conform to IEC 60285		N/A
(A.4.2.a)	Maximum ambient air temperature 50 °C		N/A
(A.4.2.b)	Maximum overcharge rate 0,08 C_5A		N/A
(A.4.2.c)	Minimum ambient temperature 5 °C		N/A
(A.4.2.d)	Maximum discharge rates for 1 h: 0,6 C_5A and 3 h: 0,25 C_5A		N/A
(A.5)	Valve regulated lead acid batteries		N/A
(A.5.1)	Conform to IEC 60869-2 or IEC 61056-1		N/A
(A.5.2.a)	Maximum ambient air temperature 30 °C with temperature compensation or 25 °C without temperature compensation		N/A
(A.5.2.b)	Minimum recharge current 0,4 C_{20}		N/A
(A.5.2.c)	Maximum discharge rates for 1 h: 0,4 C_{20} and 3 h: 0,17 C_{20}		N/A
(A.5.2.d)	Maximum r.m.s. ripple current 0,1 C_{20}		N/A
(A.5.2.e)	Minimum ambient temperature 5 °C		N/A
(A.6)	Ambient temperature of cells measured after 48 h		N/A
(A.7)	Evidence of alternative operating parameters		N/A

J	**ANNEX J: REST MODE AND INHIBITION MODE FACILITIES** (ANNEX D IN IEC 60598-2-22)		N/A
	Rest mode:		N/A
	a) only operate when normal supply has failed		N/A
	b) remote control wiring is fail-safe		N/A
	c) normal mode at restoration of normal supply		N/A
	Inhibition mode:		N/A
	a) supply failure or disconnection not cause an unwanted discharge		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) protection against interruption of remote control wiring		N/A
	1) safety circuits independent of other circuits		N/A
	2) safety circuits not pass through locations exposed to fire risk or explosion risk		N/A
	3) protection against overload may be omitted		—
	4) overcurrent in one circuit not impair circuits of safety services		N/A
	5) switchgear and controlgear clearly identified and in locations accessible only to competent persons		N/A
	6) Alarm devices clearly identified		N/A
K	**ANNEX K IN PART 1: BALLASTS INCORPORATING AN AUTOMATIC TESTING FUNCTION FOR EMERGENCY LIGHTING OPERATION**		P
	Fulfil relevant requirements of Table K.1	For automatic test function.	P
- (L)	**ANNEX L IN PART 1: PARTICULAR ADDITIONAL REQUIREMENTS FOR CONTROLGEARS PROVIDING SELV**		P
- (L.3)	**Classification**		N/A
	Class I	Yes ☐ No ☒	—
	Class II	Yes ☐ No ☒	—
	Class III	Yes ☐ No ☒	—
	non-inherently short circuit proof controlgear	Yes ☐ No ☒	—
	inherently short circuit proof controlgear	Yes ☐ No ☒	—
	fail safe controlgear	Yes ☐ No ☒	—
	non-short-circuit proof controlgear	Yes ☐ No ☒	—
- (L.4)	**Marking**		**P**
	Adequate symbols are used		P
- (L.5)	**Protection against electric shock**		**P**
	Comply with clause 9.2 of IEC 61558-1		P
- (L.6)	**Heating**		P

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Clause	Requirement + Test	Result - Remark	Verdict
	No excessive temperatures in normal use		P
	Value if capacitor t_c marked ..... :	See ANNEX 1	—
	Winding insulation classified as Class ..... :	See ANNEX 1	—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
- (L.7)	**Short-circuit and overload protection**		P
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		P
- (L.8)	**Insulation resistance and electric strength**		P
- (L.8.1)	Conditioned 48 h between 91 % and 95 %		P
- (L.8.2)	Insulation resistance		P
	Between input- and output circuits not less than 5 MΩ ..... :	>100MΩ	P
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ ..... :	--	N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :	--	N/A
- (L.8.3)	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits .....:	3750V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity .....:	1875V	P
	b) live parts and body if intended to be connected to protective earth .....:	--	N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord ..... :	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	d) live parts and an intermediate metal part .....:	--	N/A
	e) intermediate metal parts and the body .....:	--	N/A
	f) each input circuit and all other input circuits ....:	--	N/A
	3) Over reinforced insulation between the body and live parts .....:	--	N/A
- (L.9)	**Construction**		P
- (L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
- (L.10)	**Components**		P
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		P
- (L.11)	**Creepage distances, clearances and distances through insulation**		N/A
	Creepage distances and clearances not less than in Clause 16		N/A
	Distance through insulation according Table L.5 in IEC 61347-1		N/A
	1) Basic distance through insulation		N/A
	Required distance (mm) .....:	--	—
	Measured (mm) .....:	--	N/A
	Supplementary information		—
	2) Supplementary distance through insulation		N/A
	Required distance (mm) .....:		—
	Measured (mm) .....:		N/A
	Supplementary information		—
	3) Reinforced distance through insulation		N/A
	Required distance (mm) .....:		—
	Measured (mm) .....:		N/A

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IEC/EN 61347-2-7			
Clause	Requirement + Test	Result - Remark	Verdict
	Supplementary information		—
- (N)	**ANNEX N IN PART 1: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION**		N/A
- (N.4)	**General requirements**		N/A
- (N.4.1)	Material comply with IEC 60085 and IEC 60216 series		N/A
- (N.4.2)	**Solid insulation**		N/A
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N/A
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % to 5,5 kV or 1,5 x test voltage in Table N.1		N/A
- (N.4.3)	**Thin sheet insulation**		N/A
- (N.4.3.1)	Thickness and composition of thin sheet insulation		N/A
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		N/A
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		N/A
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		N/A
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		N/A
- (N.4.3.2)	Mandrel test (electric strength test during mechanical stress)		N/A
	Electric strength test after mandrel test:		N/A
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		N/A
	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	No flashover or breakdown occurred		N/A
- (O)	**ANNEX O IN PART 1: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION**		**N/A**
- (O.6)	**Marking**		**N/A**
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A
- (O.7)	**Protection against accidental contact with live parts**		N/A
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
- (O.8)	**Terminals**		N/A
	Clause 9 (8)	See clause 9	N/A
- (O.9)	**Provision for earthing**		N/A
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A
- (O.10)	**Moisture resistance and insulation**		N/A
	Clause 11 (11)	See clause 11	N/A
- (O.11)	**Electric strength**		N/A
	Clause 12 (12)	See clause 12	N/A
- (O.13)	**Fault conditions**		N/A
	Clause - (14)	See clause 28	N/A
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test according clause 12 reduced to 35 % of values according Table 1 in part 1		N/A
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ		N/A
- (O.14)	**Construction**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Clause 29 (15)	See clause 29	N/A
	Accessible metal parts insulated from live parts by double or reinforced insulation		N/A
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		N/A
- (O.15)	**Creepage distances and clearances**		N/A
	Clause 30 (16)	See clause 30	N/A
	Comply with corresponding values for luminaries in IEC 60598-1		N/A
- (O.16)	**Screws, current-carrying parts and connections**		N/A
	Clause 31 (17)	See clause 31	N/A
- (O.17)	**Resistance to heat and fire**		N/A
	Clause 32 (18)	See clause 32	N/A
- (O.18)	**Resistance to corrosion**		N/A
	Clause 33 (19)	See clause 33	N/A

28 (14)	**TABLE: tests of fault conditions**		P
Part	Simulated fault	Test result	Hazard
C1	s-c	Fuse open, no flame, no flammable gas, no molten parts	~~YES~~ /NO
C3	s-c	Fuse open, no flame, no flammable gas, no molten parts	~~YES~~ /NO
U1	s-c	Fuse open, no flame, no flammable gas, no molten parts	~~YES~~ /NO
T1	s-c	Fuse open, no flame, no flammable gas, no molten parts	~~YES~~ /NO
C6	s-c	Shut down, recoverable, no flame, no flammable gas, no molten parts	~~YES~~ /NO
IC3	s-c	Shut down, recoverable, no flame, no flammable gas, no molten parts	~~YES~~ /NO
Output (+&-)	s-c	Shut down, recoverable, no flame, no flammable gas, no molten parts	~~YES~~ /NO

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IEC 61347-2-13:2014+A1:2016			
Clause	Requirement + Test	Result - Remark	Verdict
4 (4)	**GENERAL REQUIREMENTS**		**P**
- (4)	Insulation materials for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	N/A
- (4)	Compliance of independent controlgear enclosure with IEC 60598- 1		P
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
4 (4)	SELV controlgear comply with Annex I of this part 2 and Annex L of IEC 61347-1	(see Annex L)	P
4 (-)	Transformer comply with IEC 61558		P
	Dielectric strength test of insulated winding wires is limited to 3 kV if input voltage ≤ 300 V		P

6 (6)	**CLASSIFICATION**		P
	Built-in controlgear ..... :	Yes☐ No☒	—
	Independent controlgear..... :	Yes☐ No☒	—
	Integral controlgear ..... :	Yes☒ No☐	—
6 (-)	Auto-wound controlgear .....:	Yes☐ No☒	—
	Separating controlgear .....:	Yes☐ No☒	—
	Isolating controlgear ..... :	Yes☒ No☐	—
	SELV controlgear .....:	Yes☒ No☐	—

7 (7)	**MARKING**		N/A
7.1 (7.1)	Mandatory markings		N/A
	a) mark of origin		N/A
	b) model number or type reference		N/A
	c) symbol for independent controlgear, if applicable		N/A
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)		N/A
	supply frequency (Hz)		N/A
	supply current (A)		N/A

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IEC 61347-2-13:2014+A1:2016			
Clause	Requirement + Test	Result - Remark	Verdict
	f) earthing symbol		N/A
	k) wiring diagram		P
	l) value of t_c		N/A
	m) symbol for declared temperature		N/A
	t) LUM earthing symbol		N/A
	u) if not SELV maximum working voltage U_{out} between:		N/A
	- output terminals (V) ..... :		N/A
	- output terminals and earth (V) .....:		N/A
	v) Declaration of the maximum equivalent output peak voltage Up		N/A
	w) maximum output peak voltage Ûout and its corresponding frequency fUout		N/A
7.1 (-)	Constant voltage type:		—
	- rated output power P_{rated} (W) .....:		N/A
	- rated output voltage U_{rated} (V) .....:		N/A
	Constant current type:		—
	- rated output power P_{rated} (W) .....:		N/A
	- rated output current I_{rated} (A) .....:		N/A
	Indication if for LED modules only		N/A
7.1 (7.2)	Marking durable and legible		N/A
	Rubbing 15 s water, 15 s petroleum; marking legible		N/A
7.2 (7.1)	Information to be provided, if applicable		N/A
	h) declaration on protection against accidental contact		N/A
	i) cross-section of conductors (mm²)		N/A
	j) number, type and wattage of lamp(s)		N/A
	s) SELV symbol		N/A
7.2 (-)	- declaration of mains connected windings		N/A

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IEC 61347-2-13:2014+A1:2016			
Clause	Requirement + Test	Result - Remark	Verdict
8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		**P**
- (10.1)	Controlgear protected against accidental contact with live parts		N/A
- (A2)	Voltage measured with 50 k	(see Annex A)	P
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impendance device	(see Annex A)	P
- (10.1)	Lacquer or enamel not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V .....:	4V	P
- (10.3)	Controlgear providing SELV		P
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		P
	No connection between output circuit and the body or protective earthing circuit		N/A
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N/A
	SELV outputs separated by at least basic insulation		P
	ELV conductive parts insulated as live parts		P
	Tests according Annex L of IEC 61347-1	(see Annes L)	P
- (10.4)	Accessible conductive parts in SELV circuits		P
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ..... :		N/A

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IEC 61347-2-13:2014+A1:2016			
Clause	Requirement + Test	Result - Remark	Verdict
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
9 (8)	**TERMINALS**		N/A
	Screw terminals according section 14 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the controlgear	(see Annex 3)	N/A
	Screwless terminals according section 15 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the controlgear	(see Annex 4)	N/A
10 (9)	**PROVISION FOR PROTECTIVE EARTHING**		N/A
- (9.1)	**Provisions for protective earthing**		N/A
	Terminal complying with clause 8		N/A
	Locked against loosening and not possible to loosen by hand		N/A
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
	Test according 7.2.3 of IEC 60598-1		N/A
- (9.2)	**Provision for functional earthing**		N/A
	Comply with clause 8 and 9.1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Functional earth insulated from live parts by double or reinforced insulation		N/A
- (9.3)	**Lamp controlgear with conductors for protective earthing by tracks on printed circuit board**		N/A
	Test with a current of 25 A between earthing terminal or earthing contact and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω .....:	--	N/A
- (9.4)	**Earthing of built-in lamp controlgear**		N/A
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
- (9.5)	**Earthing via independent controlgear**		N/A
- (9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7 of IEC 60598-1		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal or earthing contact and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω .....:	--	N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A

11 (11)	**MOISTURE RESISTANCE AND INSULATION**		**P**
	After storage 48 h at 91- 95% relative humidity and 20- 30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		P
	For basic insulation ≥ 2 MΩ .....:	>100MΩ	P
	For double or reinforced insulation ≥ 4 MΩ .....:	>100MΩ	P

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IEC 61347-2-13:2014+A1:2016			
Clause	Requirement + Test	Result - Remark	Verdict
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P
12 (12)	**ELECTRIC STRENGTH**		**P**
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	See Annex L	P
	Supplementary insulation, 2U + 1000 V		N/A
	Double or reinforced insulation, 4U + 2000 V	See Annex L	P
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		P
14 (14)	**FAULT CONDITIONS**		**P**
- (14.1)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		P
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)	(see appended table)	P
- (14.3)	Short-circuit or interruption of semiconductor devices	(see appended table)	P

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IEC 61347-2-13:2014+A1:2016			
Clause	Requirement + Test	Result - Remark	Verdict
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	P
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ ..... :	>100MΩ	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.7)	Relevant fault condition tests with high-power supply		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		P

15 (-)	**TRANSFORMER HEATING**		**P**
15.1(-)	General		P
	Transformer comply with clause L.6 and L.7 of IEC 61347-1		P
	Output voltage of SELV controlgear not exceed limits in 10.4 of IEC 61347-1 during the test of 15.1 and 15.2		P
15.2 (-)	Normal operation		P
	Comply with clause L.6 of IEC 61347-1		P
15.3 (-)	Abnormal operation		P
	Comply with clause L.7 of IEC 61347-1		P
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type		N/A
	Double LED modules or equivalent load connected in series to the output terminals of constant current type		P

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Clause	Requirement + Test	Result - Remark	Verdict
	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		P

16 (15)	CONSTRUCTION		P
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation	No such material used	P
- (15.2)	Printed circuits		P
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	Plugs and socket-outlets used in SELV or ELV circuits		N/A
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	Insulation between circuits and accessible parts		P
- (15.4.2)	SELV circuits		P
	Source used to supply SELV circuits:		P
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- another source		N/A
	Voltage in the circuit not higher than ELV		P
	SELV circuits insulated from LV by double or reinforced insulation		P
	SELV circuits insulated from non SELV circuits by double or reinforced insulation		N/A
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A
	SELV circuits insulated from other SELV circuits by basic insulation		N/A
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		P
-(15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		N/A

Attachment No.7

IEC 61347-2-13:2014+A1:2016			
Clause	Requirement + Test	Result - Remark	Verdict
-(15.4.4)	Other circuits		P
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		P
-(15.4.5)	Insulation between circuits and accessible conductive parts		N/A
	Accessible conductive parts shall be insulated from active parts of electric circuit by an insulation according to Table 6		N/A
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		N/A
	- all conductive parts are connected together		N/A
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A
17 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
- (16.1)	**General**		**P**
	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L		P
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P	(see Annex P)	N/A
- (16.2)	**Creepage distances**		**P**
- (16.2.2)	Minimum creepage distances for working voltages		P
	Creepage distances according to Table 7	(see appended table)	P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8	(see appended table)	N/A
- (16.3)	**Clearances**		P
- (16.3.2)	Clearances for working voltages		P
	Clearances distances according to Table 9	(see appended table)	P
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A

Attachment No.7

IEC 61347-2-13:2014+A1:2016			
Clause	Requirement + Test	Result - Remark	Verdict
	Clearances distances for basic or supplementary insulation according to Table 10	(see appended table)	N/A
	Clearances distances for reinforced insulation according to Table 11	(see appended table)	N/A
18 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		**P**
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	Electrical connections		P
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread- cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	Mechanical connections and glands		N/A
(4.12.1)	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....:		N/A
	Torque test: torque (Nm); part.....:	--	N/A
	Torque test: torque (Nm); part.....:	--	N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm).....:	--	N/A
	- lampholder; torque (Nm).....:	--	N/A
	- push-button switches; torque 0,8 Nm.....:	--	N/A
(4.12.5)	Screwed glands; force (Nm).....:	--	N/A
19 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
- (18.1)	Ball-pressure test .....:	See IEC60598-2-22 part	P

Attachment No.7

IEC 61347-2-13:2014+A1:2016			
Clause	Requirement + Test	Result - Remark	Verdict
- (18.2)	Test of printed boards .....:	See IEC60598-2-22 part	P
- (18.3)	Glow- wire test .....:	See IEC60598-2-22 part	P
- (18.4)	Needle flame test .....:	See IEC60598-2-22 part	P
- (18.5)	Tracking test .....:	See Test Table 19 (18.5)	N/A
20 (19)	**RESISTANCE TO CORROSION**		N/A
	- test according 4.18.1 of IEC 60598-1		N/A
	- adequate varnish on the outer surface		N/A
21 (-)	**MAXIMUM WORKING VOLTAGE (Uout) IN ANY LOAD CONDITION**		**P**
	Not exceed declared maximum working voltage Uout in any load condition		P
14	**TABLE: tests of fault conditions**		**P**
Part	Simulated fault		Hazard
See the report IEC 61347-2-7			

Attachment No.5

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
A (A)	**ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		N/A
-(A.1)	Comply with A.2 or A.3		N/A
-(A.2)	Voltage ≤ 35 V peak or ≤ 60 V d.c .....:		N/A
-(A.3)	If voltage > 35 V peak or > 60 V d.c. or protective impendance device; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. .....:		N/A
	Comply with Annex G.2 of IEC 60598-1		N/A
C (C)	**ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING**		**N/A**
(C3)	GENERAL REQUIREMENTS		N/A
(C3.1)	Thermal protection means integral with the convertor, protected against mechanical damage		N/A
	Renewable only by means of a tool		N/A
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with IEC 60691		N/A
	Electrical controls comply with IEC 60730-2-3		N/A
(C3.2)	No risk of fire by breaking (clause C7)		N/A
(C5)	CLASSIFICATION		N/A
	a) automatic resetting type		—
	b) manual resetting type		—
	c) non-renewable, non-resetting type		—
	d) renewable, non-resetting type		—
	e) other type of thermal protection; description ...:	IC inherently protected	N/A

Attachment No.5

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
(C6)	MARKING		N/A
(C6.1)	Symbol for temperature declared thermally protected ballasts		N/A
(C6.2)	Declaration of the type of protection provided	Copy of marking plate	N/A
(C7)	LIMITATION OF HEATING		N/A
(C7.1)	Preselection test:		N/A
	Test sample placed for at least 12 h in an oven having temperature (t_c - 5) K		N/A
	No operation of the protection device		N/A
(C7.2)	Functioning of protection means:		N/A
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N/A
	No operation of the protection device		N/A
	Introducing of the most onerous test condition determined during test of clause 14		N/A
	Output of windings connected to the mains supply short-circuited, and other part of the convertor operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A

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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
D (D)	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		N/A
	Tests in C7 performed in accordance with Annex D, if applicable		N/A
F (F)	**ANNEX F - DRAUGHT-PROOF ENCLOSURE**		**P**
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N/A
H (H)	**ANNEX H - TESTS**		**P**
	All tests performed in accordance with the advice given in Annex H, if applicable		P
I (L)	**ANNEX I: PARTICULAR ADDITIONAL REQUIREMENTS FOR SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR LED MODULES**		**P**
(L.3)	Classification		P
	Class I	Yes ☐ No ☒	—
	Class II	Yes ☐ No ☒	—
	Class III	Yes ☐ No ☒	—
	non-inherently short circuit proof controlgear	Yes ☐ No ☒	—
	inherently short circuit proof controlgear	Yes ☐ No ☒	—

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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	fail safe controlgear	Yes ☐ No ☒	—
	non-short-circuit proof controlgear	Yes ☐ No ☒	—
(L.4)	Marking		P
	Adequate symbols are used		P
(L.5)	Protection against electric shock		P
	Comply with 9.2 of IEC 61558-1		P
(L.6)	Heating		P
	No excessive temperatures in normal use		P
	Value if capacitor t_c marked ..... :	See ANNEX 1	—
	Winding insulation classified as Class ..... :	See ANNEX 1	—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
(L.7)	Short-circuit and overload protection		P
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		P
(L.8)	Insulation resistance and electric strength		P
(L.8.1)	Conditioned 48 h between 91 % and 95 %		P
(L.8.2)	Insulation resistance		P
	Between input- and output circuits not less than 5 MΩ ..... :	>100 MΩ	P
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ ..... :		N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :	>100 MΩ	P
	between LV parts and functional earthing parts		N/A
(L.8.3)	Electric strength		P

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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	1) Between live parts of input circuits and live parts of output circuits .....:	3750V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity .....:	1875V	P
	b) live parts and body if intended to be connected to protective earth .....:	--	N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord .....:	--	N/A
	d) live parts and an intermediate metal part .....:	--	N/A
	e) intermediate metal parts and the body .....:	--	N/A
	f) each input circuit and all other input circuits ....:	--	N/A
	3) Over reinforced insulation between the body and live parts .....:	--	N/A
	4)between LV parts and functional earthing parts		N/A
(L.9)	Construction		P
(L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
(L.10)	Components		P
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		P
(L.11)	**Creepage distances, clearances and distances through insulation**		--
	Creepage distances and clearances not less than in Clause 16		--
	Distance through insulation according Table L.5 in IEC 61347-1		--
	1) Basic distance through insulation		N/A
	Required distance (mm) .....:	--	—
	Measured (mm) .....:	--	N/A
	Supplementary information		—

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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	2) Supplementary distance through insulation		N/A
	Required distance (mm) .....:	--	—
	Measured (mm) ..... :	--	N/A
	Supplementary information		—
	3) Reinforced distance through insulation		N/A
	Required distance (mm) .....:		—
	Measured (mm) ..... :		N/A
	Supplementary information		—

Annex J (--)	**Particular additional safety requirements for a.c., a.c./d.c. or d.c. supplied electronic controlgear for emergency lighting**		**N/A**
J.1 (--)	General		N/A
J.2 (--)	Marking		N/A
J.2.1	Mandatory markings		N/A
	a) symbol of a.c., a.c./d.c. or d.c maintained emergency electronic controlgear	EL	N/A
	b) rated emergency power supply voltage or voltage range		N/A
J.2.2	Information to be provided if applicable		N/A
	a) Limits of the ambient temperature range		N/A
	b) Emergency output factor		N/A
	c) Information on whether the control gear is intended for use in luminaires for high-risk task area lighting		N/A
J.3	General notes on tests		N/A
J.4	Starting conditions		N/A
	Control gears shall start rated load(s) without adversely affecting the performance when operated in emergency mode		N/A
J.5	Operating condition		N/A

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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	The provisions of 7.2 of IEC 62384:2006 apply at 90 % and 110 % of the rated emergency supply voltage		N/A
J.6	Emergency supply current		N/A
	At the rated emergency supply voltage or voltage range, the emergency supply current shall not differ by more than ±15 % from the declared value when the control gear is operated in emergency mode with maximum load power		N/A
J.7	EMC immunity		N/A
J.8	Pulse voltage from central battery systems		N/A
	The d.c. supplied emergency controlgear shall withstand, without failure, any pulses caused by switching other equipment in the same circuit		N/A
J.9	Tests for abnormal conditions		N/A
	The provisions of Clause 12 of IEC 62384:2006 apply		N/A
J.10	Temperature cycling test and endurance test		N/A
	The provisions of Clause 13 of IEC 62384:2006 apply		N/A
J.11	Functional safety		N/A
	EOFx is measured 5 s and 60 s after switch on of the control gear in emergency mode at maximum emergency supply voltage and at minimum emergency supply voltage		N/A
	For the calculation of EOFx the lower value of the measurements below is used:		N/A
	a) electrical output parameter measured after 60 s at maximum voltage/electrical output parameter measured in reference setting		N/A

Attachment No.5

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	b) electrical output parameter measured in steady state conditions at minimum supply voltage/electrical output parameter measured in reference setting		N/A
	After 5 s of operation with maximum emergency supply voltage at least 50 % of the declared EOFx shall be reached		N/A
(N)	**ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION**		N/A
(N.4)	General requirements		N/A
(N.4.1)	Material comply with IEC 60085 and IEC 60216 series		N/A
(N.4.2)	Solid insulation		N/A
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N/A
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % of 5,5 kV or 1,5 x test voltage in Table N.1		N/A
(N.4.3)	Thin sheet insulation		N/A
(N.4.3.1)	Thickness and composition of thin sheet insulation		N/A
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		N/A
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		N/A
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		N/A
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		N/A
(N.4.3.2)	Mandrel test (electric strength test during mechanical stress)		N/A

Attachment No.5

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Electric strength test after mandrel test:		N/A
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		N/A
	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	No flashover or breakdown occurred		N/A
(O)	**ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION**		**N/A**
(O.6)	Marking		N/A
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A
(O.7)	Protection against accidental contact with live parts		N/A
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
(O.8)	Terminals		N/A
	Clause 9 (8)	See clause 9	N/A
(O.9)	Provision for earthing		N/A
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A
(O.10)	Moisture resistance and insulation		N/A
	Clause 11 (11)	See clause 11	N/A
(O.11)	Electric strength		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Clause 12 (12)	See clause 12	N/A
(O.13)	Fault conditions		N/A
	Clause 14 (14)	See clause 14	N/A
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test reduced to 35 % of values according Table 1 in part 1		N/A
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ		N/A
(O.14)	Construction		N/A
	Clause 17 (15)	See clause 17	N/A
	Accessible metal parts insulated from live parts by double or reinforced insulation		N/A
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		N/A
(O.15)	Creepage distances and clearances		N/A
	Clause 18 (16)	See clause 18	N/A
	Comply with corresponding values for luminaries in IEC 60598-1		N/A
(O.16)	Screws, current-carrying parts and connections		N/A
	Clause 19 (17)	See clause 19	N/A
(O.17)	Resistance to heat and fire		N/A
	Clause 20 (18)	See clause 20	N/A
(O.18)	Resistance to corrosion		N/A
	Clause 21 (19)	See clause 21	N/A

Attachment No.5

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
(P)	**Creepage distances and clearances and distance through isolation (DTI) for lamp controlgear which are protected against pollution by the use of coating or potting**		N/A
(P.1)	**General**		N/A
	P.2 applies if creepage distances less than the minimum in Table 7 and 8		N/A
	P.3 applies if clearance less than the minimum in Table 9, 10 and 11		N/A
(P.2)	**Creepage distances**		N/A
(P.2.2)	Minimum creepage distances for working voltages and rated voltages with frequencies up to 30 kHz (Table P.1)		N/A
	Basic or supplementary insulation:		N/A
	Required creepage.....:	--	—
	Measured.....:	--	N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Required creepage.....:	--	—
	Measured.....:	--	N/A
	Supplementary information		—
(P.2.3)	Creepage distances for working voltages with frequencies above 30 kHz (Table P.2)		N/A
	Voltage $\hat{U}_{out}$ kV .....:	--	—
	Frequency.....:	--	—
	Required distance..... :	--	—
	Measured.....:	--	N/A
	Supplementary information		—
(P.2.4)	Compliance with the required creepage distances		N/A
(P.2.4.1)	Compliance in accordance with 16.3.3 and test according P.2.4.2		N/A
(P.2.4.3)	Electrical tests after conditioning		N/A
(P.2.4.3.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3)	**Distance through isolation**		N/A
(P.3.4)	Electrical tests after conditioning		N/A
(P.3.4.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3.4.2)	Impulse voltage dielectrical test		N/A
	Basic or supplementary insulation:		N/A
	Working/rated voltage .....:	--	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Impulse voltage.....:	--	N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Working/rated voltage .....:	--	—
	Impulse voltage.....:	--	N/A
	Supplementary information		—

Attachment No.6

Photo Documentation

Model: DS-EL-01S

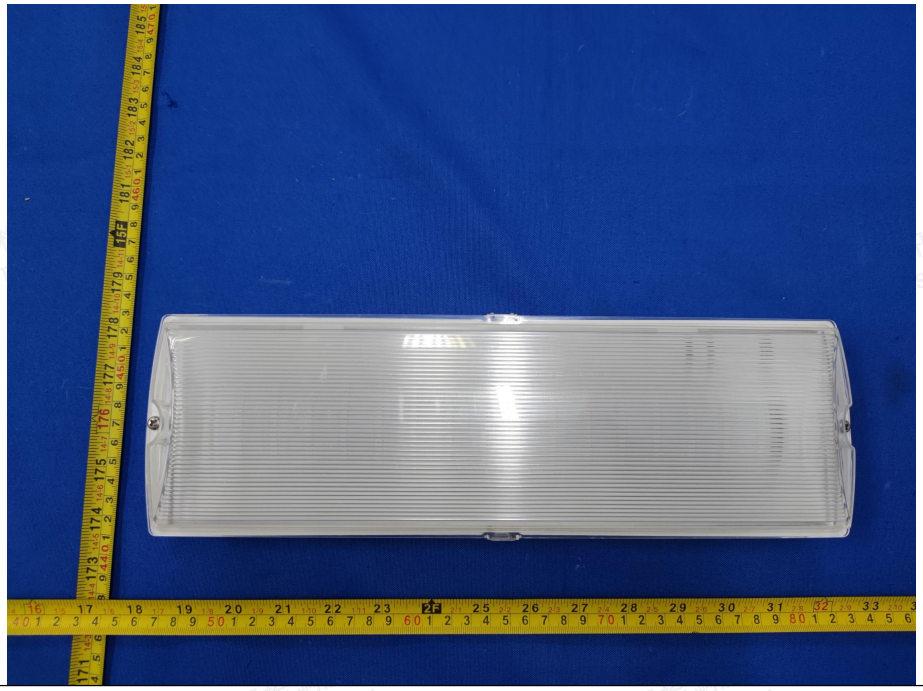

Photo 1

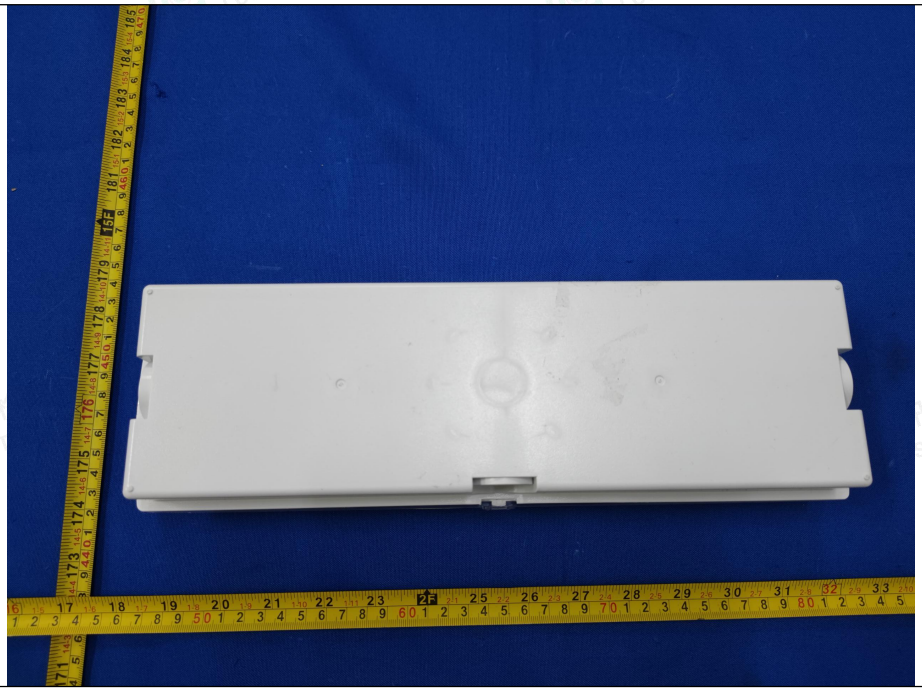

Photo 2

Attachment No.6

Photo Documentation

Photo 3

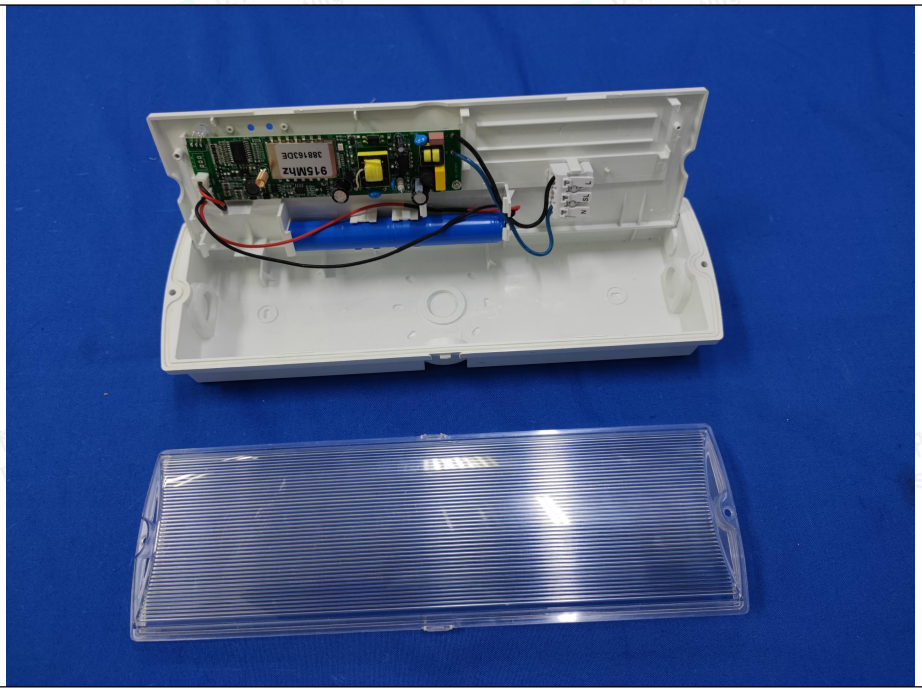

Photo 4

Attachment No.6

Photo Documentation

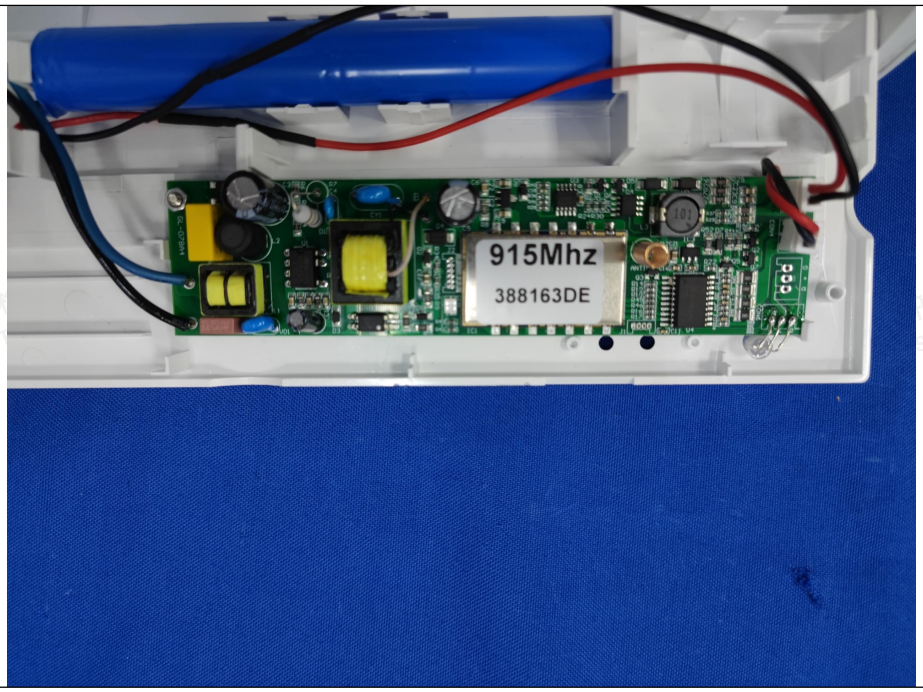

Photo 5

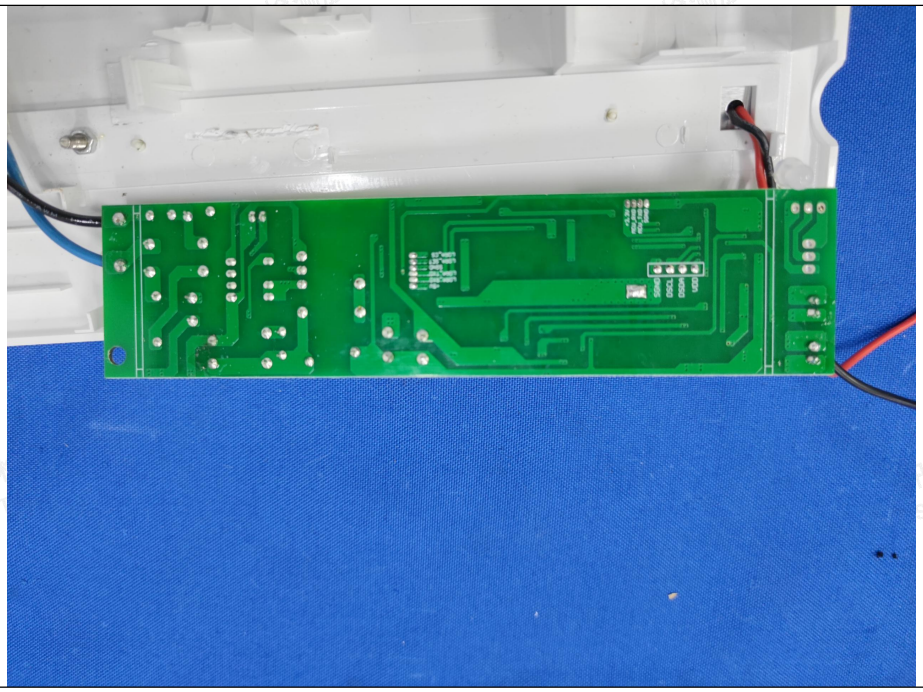

Photo 6

Attachment No.6

Photo Documentation

Photo 7

Model: DS-EL-01M

Photo 8

Attachment No.6

Photo Documentation

Photo 9

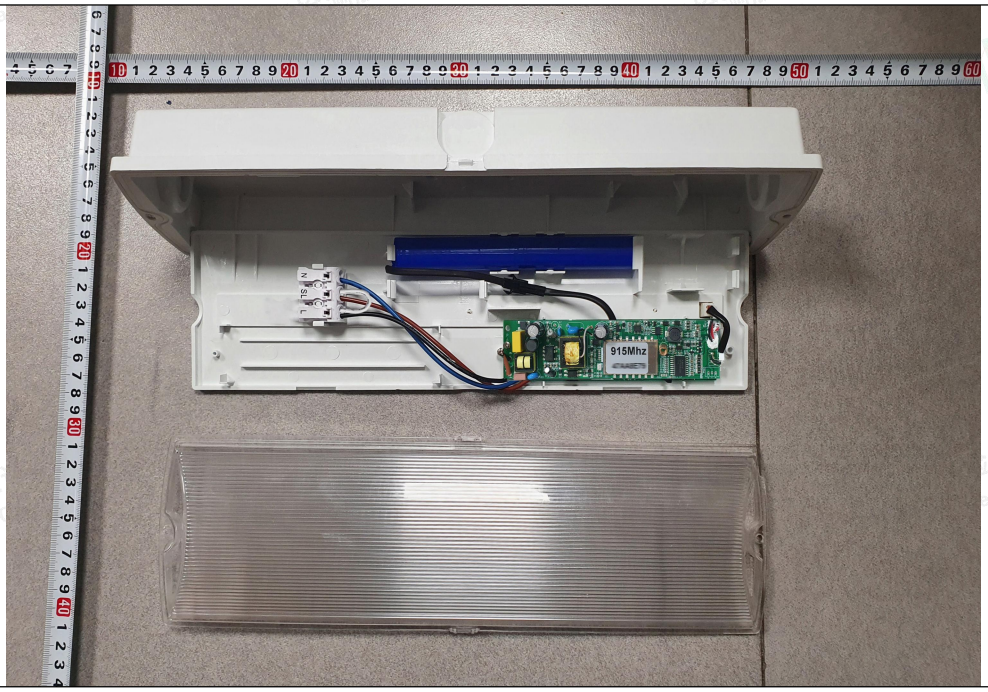

Photo 10

Attachment No.6

Photo Documentation

Model:DS-EL-02M

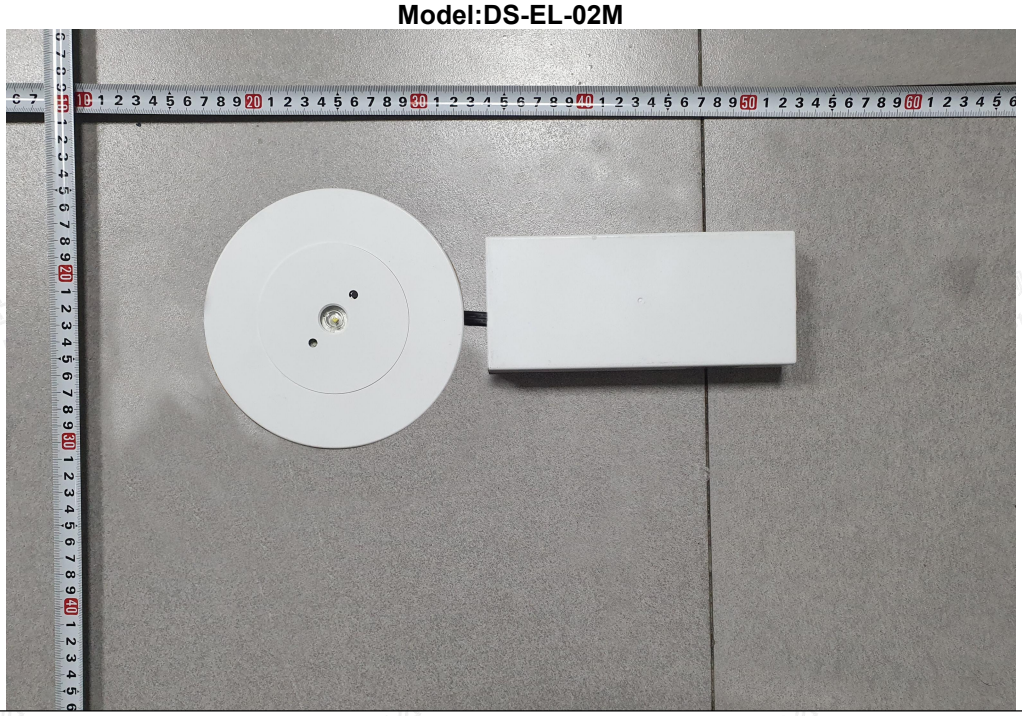

Photo 11

Model:DS-EL-03M

Attachment No.6

Photo Documentation

Photo 12

Model:DS-EL-04M

Photo 13

----------End of Test Report----------